



# SPECIAL METHOD IN GEOGRAPHY

*FROM THE THIRD THROUGH  
THE EIGHTH GRADE*

BY

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NEW EDITION

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## PREFACE

THE purpose of this book is to outline a complete course of study in geography from the third through the eighth grade. The character and arrangement of the materials selected for each grade are discussed at length and the method of treating topics illustrated.

The characteristic points to be noted are (1), the gradual movement from the home outward; (2), the strong concentration of study, first upon North America and second upon Europe; and (3), the selection of types as centres for the organization of materials.

In laying out the course of study in Chapter XI, the points of correlation between geography and other studies are marked out, and the list of books at the close is designed as a direct help to teachers in realizing this course of study.

This is one of a series of Special Methods, all aiming at the same general purpose. The others are as follows:—

1. The Special Method in Primary Reading and Oral Work with Stories.
2. The Special Method in the Reading of Complete English Classics, from fourth to eighth grade.



3. The Special Method in History.
4. The Special Method in Natural Science.

These Special Methods are designed to work out in the particular detail of each study the principles discussed in the two volumes of General Method, based on the Principles of Herbart, and the Method of the Recitation.

A course of study in two volumes is in preparation by the author in which the work outlined in the Special Methods and the courses in the remaining studies are combined into one comprehensive plan for the whole common school.

In order to carry such a plan into full execution it is necessary to work out special books of material which furnish the full treatment of important topics in such studies as geography, history, and science. A series of such supplementary books is in preparation, and is already partly worked out.

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## THESES

THE chief ideas discussed and illustrated in this book may be briefly stated as follows:—

1. Geography is a study of the earth as the home of man. Each important subject treated should contain a central idea illustrating this point of contact between man and the physical world.

2. Geography deals with man in his present physical, social, and industrial environment. It occupies the broad practical ground of everyday life as it is.

3. Topics in pure science such as biology, physiography, meteorology, and in history are excluded from geography proper. Such topics, so far as they are germane to the common school work, belong to the course of study in natural science or history.

4. The general movement in geography is from the home neighborhood outward to the home state, the United States, North America, Europe, Africa, Asia, Australia, and South America.

5. The course of study should be so arranged that each succeeding year brings on a new set of important topics, not merely a rehash of old ones.

6. The topics fully treated in the earlier grades (3, 4, and 5) should be simple and crude, like bulky material things, while the later subjects grow more refined and complicated.

7. A few important topics for each grade should be carefully selected and elaborately treated.

8. These central topics in each grade should be well-chosen types which form the basis for comparison, classification, and a constantly growing organization of geographical knowledge.

9. There are four chief stages in this course in geography: (1) Home geography. (2) Studies on North America. (3) Studies on Europe. (4) The movement from Europe outward to the rest of the world.

10. The skilful oral treatment of geography topics in intermediate grades is essential to good instruction.

11. In the elaborate treatment of any type study, its causal and class relations to other things in geography, natural science, and history, in short, to its whole environment, should be carefully worked out.

12. The constant review and elaboration of previous lessons should be brought about by a detailed comparison of each new topic with similar topics studied in previous work.

13. Many important geographical ideas require a continuous treatment and enlargement through the successive years of the school course.

14. Such series of similar and connected topics, extending throughout the course of instruction, will gradually build up and organize the chief representative phases of geographical knowledge.

15. Nearly all the facts of formal geography, such as position, direction, names and location of places, countries, etc., can best be learned incidentally, as essential details of large and interesting topics.

16. Maps, pictures, diagrams, models, materials, products, excursions, and manual constructions should be freely used to give clearness and reality to geographical studies.

17. Children should be carefully trained in the use of text-books, maps, statistical tables, geographical readers, books of travel, and other books of reference.



# SPECIAL METHOD IN GEOGRAPHY

## CHAPTER I

### THE AIM AND GENERAL CHARACTER OF GEOGRAPHY

WHILE it is admitted that geography is the study of the earth as related to man, it is not customary to hold strictly to this definition and to select for topics only those which emphasize this relationship.

In fact the relationship to man may be wholly overlooked, and topics are often chosen and treated at first, without any direct reference to man, as forests, mountains, oceans, islands, the wild animals or plants of a region, etc. Of course these topics are found later to have a relation to man, but this relationship is not the central idea and basis of the treatment. Other topics, such as a canal, a lumber camp, a cattle ranch, a seaside resort, a coffee plantation, emphasize the relationship to man and make it fundamental.

That geography is focussed upon the interactions between man and the earth is now affirmed by the best authorities.

Professor W. M. Davis says: "It is especially the factor of relationship of earth and inhabitants that characterizes geography as a subject apart from other



sciences, and that gives an essential unity of content and discipline to all its varied parts."<sup>1</sup>

Nicholas Murray Butler says: "The conception of geography that is here presented seems to me to be the only one which can support its claim to a large share of the time and thought of the elementary school; that is, the conception of it as a subject which relates the sciences of nature and of man. As a bridge over which to pass backward and forward from the study of man's habitat to his activities and his limitations, and back again, geography is a unique and indispensable element of an elementary education. So treated it is excelled in suggestiveness by none of its companion studies."<sup>2</sup>

The report of the Committee of Fifteen says: "After arithmetic, which treats of the abstract or general conditions of material existence, comes geography, with a practical study of man's material habitat and its relations to him. It is not a simple science by itself, like botany or geology or astronomy, but a collection of sciences levied upon to describe the earth as the dwelling-place of man and to explain something of its more prominent features."

It is not necessary to multiply citations in favor of this accepted view of the scope of geography.

The difficulty, however, lies not in securing a good and generally accepted definition of the meaning and

<sup>1</sup> "Progress of Geography in the Schools."

<sup>2</sup> "The New Basis of Geography," by Redway.

scope of geography, but in working out a coherent and progressive course of study based on this idea.

The point of view from which any topic is treated in geography is different from that of any one of the sciences in teaching the same facts. The outcome of man's contact with nature is the centre of every strictly geographic topic. Geographers and book-makers are constantly falling away from this idea and dropping back into the separate sciences, — geology, physiography, meteorology, and biology. It is as if they were satisfied with a mere definition of geography, but in order to get some content worth discussing they must drop back into one of the natural sciences. The main fortress of geography is left undefended while a number of surrounding ramparts thrown up by the separate sciences are well manned.

In order to get the main contention clearly before us, we are willing to abide by the following somewhat drastic statement: Topics in pure science, such as meteorology, physiography, and in history, are excluded as such from geography proper. Geography will use these same facts, but it will control them and focus them upon its own centres of thought. Such science topics, so far as they are germane to the common school work, belong to the course of study in natural science and history, not to geography.

W. M. Davis says ("First Year Book"): "Geography has to-day entered well upon its third stage of progress. The 'causal notion' is generally ad-

mitted to be essential in the study of the relation of the earth and its inhabitants. Thus understood, geography involves the knowledge of two great classes of facts: first, all those facts of inorganic environment which enter into relationship with the earth's inhabitants; second, all those responses by which the inhabitants, from the lowest to the highest, have adjusted themselves to their environment. The first of these classes has long been studied as physical geography, although the name has long been used as a cover for many irrelevant topics. In recent years there has been a tendency to compress the name into the single word, 'physiography.'

"The second of the two classes of facts has not yet reached the point of being named, but perhaps it may come to be called ontography.

"Neither physiography nor ontography alone is geography proper, for it involves the relation in which the elements of its two components stand to each other. Each of the components must be well developed before geography can be taken up as a mature study."

This passage gives the right conception of geography, but at the same time shows how difficult it is to maintain the integrity of geography in the face of physiography and other sciences.

If this were merely a matter of definitions and verbal distinctions, it could be ignored, but our geographies are filled up to a considerable extent with topics in pure science taken from meteorology, geology,

physiography, and biology to the exclusion of a proper treatment of purely geographical topics. Even this would not be so serious if the science topics were appropriate to the children and suitable to their age and understanding. But many of the mathematical, geological, and physical topics in the geographies are known to be beyond the clear comprehension and interest of children.

The Committee of Fifteen says : —

“ The child commences with what is nearest to his interests, and proceeds gradually toward what is to be studied for its own sake. It is therefore a mistake to suppose that the first phase of geography presented to the child should be the process of continent formation. He must begin with the natural differences of climate and lands and waters and obstacles that separate peoples, and study the methods by which man strives to equalize or overcome these differences by industry and commerce, to unite all places and all people, and make it possible for each to share in the productions of all. The industrial and commercial idea is therefore the first central idea in the study of geography in the elementary schools. It leads directly to the natural elements of difference in climate, soil, and productions, and also to those in race, religion, political status, and occupations of the inhabitants, with a view to explain the grounds and reasons for this counter-process of civilization which struggles to overcome the differences. Next comes

the deeper inquiry into the process of continent formation, the physical struggle between the process of upheaving or upbuilding of continents and that of their obliteration by air and water; the explanation of the mountains, valleys, the plains, the islands, volcanic action, the winds, the rain distribution. But the study of cities, their location, the purposes they serve as collecting, manufacturing, and distributing centres, leads most directly to the immediate purpose of geography in the elementary school. From this beginning, and holding to it as a permanent interest, the inquiry into causes and conditions proceeds concentrically to the sources of the raw materials, the methods of their production and the climatic, geologic, and other reasons that explain their location and growth."

The assumption is that the strictly geographical topics, dealing with man's experience in contact with nature, are more tangible and interesting to children in the elementary school than the physiography of the earth. Believing this to be true, we set ourselves first of all to the task of selecting and arranging a more strictly geographical series of topics for the elementary course of study, omitting largely the more distinctly scientific topics.

On the other side, we may say that there is no more interesting and instructive study in primary and intermediate grades than nature study or elementary science. In our "Special Method in Natural Science" we have discussed at length the value of nature study

in all the grades of the common schools. A full course of study in nature topics is there laid out, with illustrations.

In the present chapter we wish to draw the line definitely between geography and nature study. In the two primary grades our course of nature study is given mainly to an observation of plants, animals, and the general physical environment of children. Many teachers and writers do not discriminate clearly between nature study and geography in primary and intermediate grades. Without wishing to be over-critical or pedantic in this matter, we think it advisable to have a distinctly marked geographical course from the beginning of the third grade on. The main reason for this is that geography from the beginning deals with a very interesting and valuable series of topics which the separate sciences do not attempt to treat. Geography has the double interest which attaches to natural objects and human beings. It deals with people in the midst of their physical, social, industrial, and political surroundings. Geography studies should be intensely practical and social in their influence, because in the industrial and commercial pursuits men are producing and distributing those articles of mutual interchange and accommodation by which they get better acquainted and learn to depend upon one another. The political and economic topics of geography bring children as close as possible to the actual business and turmoil of the strenuous present

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It brings them equally in contact with mountains, rivers, mines, forests, deserts, cities, climates, and products of the diversified earth. One reason why physiography and the other physical sciences are not adapted to elementary instruction is that they inevitably deal with all these nature topics from the standpoint of systematic science, while geography is willing to take the crude materials as an immediate and necessary background for social units of study.

Any one who will read carefully one of the first-class books of physical geography or physiography like that of Tarr or Davis, and will ask himself how much of this can be made available for elementary instruction, may find that he has but a meagre remnant of the whole. On the other hand, geography properly taught from the third grade on will contain a very large amount of crude physiographic material.

Geography is the study of the earth as the home of man. This definition gives the key to geographical study, as distinguished from other studies and as related to them. The study of the earth alone, its phenomena and forces, its vegetation and animals, its rocks and atmosphere, is natural science pure and simple. The study of man in his work and progress, his struggles and representative deeds, is history. The study of the earth as related to man is geography. Every topic in geography has a double footing in natural science and history. It has two faces,—one toward nature and one toward

man. This double, or complex, character, is the distinguishing trait of a strictly geographical topic. The moment a topic becomes purely scientific or purely historical it loses its geographical character.

Geography is the connecting bridge between two great real studies, — nature and man. A description of the Illinois or Hudson river, for example, is the presentation of a great complex object in nature as related to the industries, travel, homes, and cities of men. The treatment of the city of Duluth as a natural trade centre includes not only the railroads and shipping that centre there (man's work) but also the surface, climate, and natural resources of the Northwest, and the series of lakes and rivers which connect this productive region with the Eastern states and the Atlantic Ocean. The study of the White Mountains as a tourists' resort would involve a multitude of nature's works in rocks, gorges, and brooks, and man's work in villages, roads, traditions, mountain-engineering, summit house, and other products of his brain and hand.

I shall first inquire whether there are any important geographical topics which should be treated from a strictly geographical standpoint, and not from the standpoint of any other study, such as botany or history. Many books and teachers do not discriminate closely between geographical topics and those which are strictly scientific (geological, zoological, astronomical, etc.). A topic in geography proper is never strictly

identical with one in natural science, however they may overlap. In fact, it never centres in the same unit of thought. A geographical topic is, generally, a geographical unit, which involves incidentally a variety of facts from natural science and history. Pikes Peak and vicinity, as a resort, are a mountain neighborhood with a variety of scenic attractions, all centring and culminating in the giant peak. A description of this mountain resort involves such topics as Manitou and its mineral springs as a health resort, Cheyenne Canyon, the Garden of the Gods, the Cave of the Winds, the foot-trail up the peak, the railroad to the top, the timber-line and rock-strewn summit, the views of the distant mountains and plains, the signal station, —in short, works of both nature and man's ingenuity. A great variety of scientific and historical facts is suggested by such a description as, for example, the explanation of the mineral springs, of air pressure at the base and summit, of granite boulders and their origin, of the formation of canyons, valleys, etc., by erosion, of vegetation at different levels, of the exploration of the peak, of the engineering difficulties of road-building. Any one of these topics, and several others, might suggest detailed scientific or historical treatment, but the geographical standpoint does not call for a detailed study of any of them. We may get a clear, definite, and interesting account of Pikes Peak

without a technical treatment of any of these topics. But Pikes Peak, as a typical mountain resort and centre, is important enough to call for a full descriptive geographical treatment. It will never receive this treatment in any one or in all of the natural sciences, or in history. The standpoint of each science is different, and the geographical unit is never reached. The geographical unit and its treatment would naturally come first in the order of the studies because it is a prominent, easily grasped whole. The adequate treatment of the suggested science topics, as wholes, will naturally fall to the separate sciences.

The topics which can be treated from a strictly geographical standpoint are large complex units, each of which involves a variety of scientific and historical facts. Their unity is found not in any one of the sciences but in the geographical type which this object illustrates. The Hudson River, for example, the full treatment of which also involves a multitude of scientific, historical, commercial, and scenic constituents, is a geographical unit which typifies in its main points the character of many rivers. The description of the important topics in this subject can be made very instructive and interesting without any effort to explain and work out in detail and separately the scientific problems which are suggested by the detailed treatment; for example the geologic formations along its shores, Hudson's first voyage up the river, the connection with Lake Ontario in the

glacial period, the effect of stripping away the forests, the native plants and animals of the Adirondack region. These latter subjects may be very interesting for science or history lessons; they cannot be adequately treated in geography. The purpose of geography is not to ignore them but to suggest them, to use what is needed of them, and to show how intimate is the relation between them and geography.

To further illustrate the distinctiveness and importance of the geographical types take the treatment of the coal mine as a geographical topic. We have an extremely interesting and instructive description of the sinking of the shaft, of the ventilation of the mine, of the blasting out and hoisting of coal, the dangers from caving in and from explosions, of the transportation by river and railroad, and of the uses of coal in commerce, manufactures, and for heating purposes. We may have such a geographical treatment of the coal mine as this, without any satisfactory discussion of the strictly scientific questions which are sure to be suggested by this study; for example, the origin of coal beds, the explosion of gases, the steam engine, the principle of the safety lamp, the oxygen in the air, the first discovery and use of coal, etc. We may well afford to treat these science topics in parallel lessons in natural science, but it would utterly swamp the geography lesson to branch out into anything like a scientific treatment of such topics. On the other hand, the coal mine is

a legitimate geographical topic which deserves to be handled in this study because it can never be so handled in any other school study. It has a central, controlling idea, which brings into relation and unity a large complex body of facts. It is the type of one of man's occupations in subduing the world, and it is closely and vitally related to commerce, structure of the earth, and to human welfare generally.

In order to secure and establish the independent right of geography in the sisterhood of studies, it is necessary to make out a series of important type subjects, in each one of which a characteristic central thought is so distinctly geographical that no other standpoint of natural science or history is able to dislodge the teacher from his geographical stronghold. Now this is exactly what is claimed for the leading series of type studies in geography. Each one of them centres in a geographical idea that is a natural stronghold. It is the focus for a variety of objects and facts which find in it as a centre their coherency and unity. The Rhine River is such a geographical unit. A California gold mine is another. The Andes Mountains, Minneapolis, and Lake Superior are others. If we can maintain the right of this series of geographical centres to a distinct place among studies, we shall be able to hold the geographical field against all attacks, even against those who would obliterate the boundaries between geography and natural science.

## CHAPTER II

### SELECTION AND ARRANGEMENT OF MATERIAL

GEOGRAPHY has more sides to it than any other school subject. As from a hilltop or fortress, it looks out in all directions upon the fields of knowledge. It draws interesting materials from many sciences, from history, mathematics, and the fine arts.

In approaching the field of geography with children, we find ourselves face to face with such a variety and countless multitude of facts that we must at once resort to some principle of selection. Out of this miscellaneous mass of facts and phenomena we must select a few. Some facts are secondary or trivial; others are central and wide-reaching in their influence. Some facts are isolated and exceptional; others are typical and illustrative of laws and principles. After deciding what the proper realm of geography is, it is our next duty to select those important subjects, a full understanding of which will be equivalent to a mastery of the strategic points in a widespread country. If we can take full possession of a line of these commanding fortresses, we shall be able to hold and subdue the whole country at our leisure.

In planning the course of study in geography, we have been guided in the selection and arrangement of the topics by the following ideas:—

1. The general movement is from the home and home neighborhood outward, first to the home state, then to the surrounding states, to the United States and to North America as a whole, later to Europe and the rest of the world.

This idea while important is not exclusive in determining the order of the topics. It gives emphasis to home geography and to those familiar, concrete, home experiences which should form the substratum of all geographical thinking. The typical and illustrative character of home objects and occupations which makes them good interpreters of distant and foreign subjects has been overlooked. We are beginning to recognize that in all studies the home is the centre and rendezvous for all excursions into the field of knowledge: as it were the clearing-house for our whole commerce with the world.

The objection that upon leaving the home neighborhood it makes no difference whether we pass into the next county or state or into Africa and Australia is not worth much. The child's familiarity through conversation and hearsay with the next lying regions, cities, mountains, etc., is tenfold greater than his acquaintance with foreign countries.

It is necessary, however, that children should early gain a somewhat clear notion of the world-whole, of



the great earth as a globe, with its continental lands and wide-stretching oceans. This simple framework will enable him to locate and map out clearly his outward movement into the great world. In all geography study, the mind acts both analytically and synthetically. Grasping the entire earth as a unit, it analyzes the whole into its parts, and, on the other hand, moving outward from the home as a centre it builds constantly upon this basis. The time needed, however, to get a clear and simple grasp of the world-whole is so small, while the work of gathering the rich and varied material in the outward movement from the home is so great, that the latter largely predominates.

2. In this outward movement from the home there are four distinct stages: (*a*) Home geography, with its excursions and varied study of local topography, occupations, and social life. (*b*) The leading topics of the United States and North America. This is a very interesting field of broad and varied studies, illustrating almost all phases of geographical knowledge. (*c*) The important phases of European geography. While Europe is relatively a small part of the world it has a greater number of valuable and instructive geographical topics than any other continent, due to the varieties of its physical structure, the many distinctly different nationalities it exhibits, and the higher degree of excellence attained in the arts of life. (*d*) The movement from Europe outward into

the world-whole, — Asia, Africa, South America, Australia, and the larger physical and commercial aspects of the world-whole.

These four stages, however, do not determine exclusively the order of the topics even in the synthetic movement from the home outward. We shall find that even in the study of home geography as well as in the treatment of important topics of the United States, many other parts of the world, as China, South America and Australia, will be brought clearly into view.

3. The most obvious reform in planning the course of study in geography is that of reducing the number of subjects treated in each grade to a few main topics, each of which has an important fundamental idea. Such a sifting out of the strong, representative topics most deserving of treatment will enable us to cast aside a burdensome load of unnecessary luggage.

At the same time by limiting the study to a few important units, time is gained for those picturesque and descriptive details which are indispensable to lively interest and vigorous thought.

Professor W. M. Davis says: "The hopeful progress that school geography has made in the last twenty years is characterized largely by a diminution in the number of isolated empirical items to be committed to memory, and by a corresponding increase in the number of principles and generalizations to be intelligently studied. There is no reason for thinking that this progress has reached its limit; there is, on the

other hand, much ground for believing that, as the teachers and the teachers of teachers of geography gain a larger and broader understanding of the subject in its mature development, the replacement of the lonesome empirical item by the rational category, under which the items are grouped in good fellowship, will continue to increase beyond its present moderate measure. Items must still be presented in abundance, young pupils need plenty of specific information ; but the items should be introduced in illustration of the categories to which they belong rather than as sufficient unto themselves."

4. The topics selected for the earlier grades should be simple, striking, and obvious in their character, not complex, intricate, and inscrutable. The city of New York as a centre of trade, manufacture, commerce, of political and social life, is too multiplex and involved for a child's appreciation. It should be put as late as possible in the study of the United States. The more difficult problems of physiography, as of river-action, mountain-building, etc., the complexities of higher manufacturing processes cannot be explained to younger children. For the intermediate grades the topics chosen should present crude, tangible geographical objects, — forests and lumbering, cattle-ranches, striking mountain peaks, the larger agricultural productions, iron-mining and blast furnaces, famous scenery in mountains and along coasts and rivers, smaller trade centres where a few products

predominate, and voyages and journeys among striking and interesting scenes.

Throughout the course of study there should be a careful movement from the simple to more complex topics. If it were simply a matter of learning the names and locations of geographical places, products, etc., we need not worry about this grading of topics; but since we are now trying to acquire gradually a mastery of geographical concepts, of underlying ideas and processes in man's industrial contact with the earth forces and with his fellows, we must arrange in a graded series the units of study which lead up to an understanding of man in his complex environment.

5. The course of study in history which runs parallel with that in geography is everywhere conditioned and controlled by geographical surroundings. Students and writers of history are giving more and more attention to this geographical basis. Not only is it necessary to make a pretty close study of a region in order to understand an historical topic but it may be well also to make a fuller study of the whole region from the geographical standpoint. Moreover, since the geography and history of America and Europe often deal with the same districts of country at about the same time in the school course, the history may well suggest a number of the best geography topics for each grade. History is itself based upon geography, and it also greatly increases the interest in geography.

These seven topics cover a broad and varied field of home observation, and make up the physical environment which presses in from all sides through the senses. It may not be necessary to follow this outline in a fixed or unchanging order, but to consider the season, the neighborhood, the size of the class, and the local opportunities for excursions.

Many topics studied in the two preceding grades have paved the way for home geography. Robinson Crusoe has suggested many local interests. The science lessons have already led the children out upon short excursions. The fairy tales and myths have given vivid pictures of many home scenes.

To those, therefore, who are interested in the problem of concentration of studies, the whole body of knowledge which we are now considering in third grade shows up not only a complex of closely related studies but also a close adaptation to the interest and needs of children of this age.

We will enter upon a brief discussion of each of the seven topics previously mentioned.

1. *Food products*.—The spring season is a fitting time to make a few excursions to the gardens and, perhaps still farther, to the farms. The gardeners are busy with hotbeds, seeds, young plants, and the fresh-turned soil. At this season, also, many of the children may observe the work of ploughing, transplanting, and cultivating in their own gardens, and report upon the same. In the fall, also, before and after

the first frosts, they may again turn a closer attention to the products of the gardens, orchards, and fields. In the springtime it may be well to select one or two characteristic vegetables for a full description of the planting and cultivation, as the cabbage seed, hot-bed, transplanting, hoeing, storing, or covering-in for winter. In the same way one or two of the fruits may be examined and discussed, as blackberries and grapes.

A catalogue should be made of the vegetables produced within a radius of several miles, as tomatoes, cabbages, turnips, onions, potatoes, tobacco, etc. Without going far from home, but keeping within the children's range of observation, we may form a long and varied list, and find instructive lessons, which will serve good purposes in future studies. With town children it is often necessary to take systematic lessons of this kind, else they will be ignorant of elementary ideas in agriculture, commerce, and surface.

The list of food products about our home may be increased by a list of the fruits, cultivated and wild, found in our gardens, orchards, woods, and fields. We need to get definite knowledge of plants which yield berries and other small fruit, as well as kinds of apple trees, crabs, plums, cherries, haws, etc.

Besides the vegetables and fruits, what grains are raised on the farms near us? Take a grain like *wheat* and describe the succession of steps in preparing the

ground, drilling, harvesting, threshing, milling, etc., till it is ready for final use.

The farmer's stock is an important part of his outfit, as horses, cattle, sheep, or swine. The relations of grain-raising to stock-raising, and the profits of the farmer in combining the two, are of interest. A description of the farmer's work in winter, spring, summer, and fall may give some notion of the variety of his occupations. The tools, machines, barns, and sheds necessary to the farmer are noticed. It is worth while to observe when and how the farmer gets his grain and stock to market. The need of wagons, roads, bridges, and markets is made apparent.

2. The second main topic, *building materials*, calls for an investigation of the things used in building our houses,—pine and hard wood, the varieties of stone used, brick, sand, lime, iron, glass, tin, lead, slate, paper, and paint. Besides observing the variety of uses to which these things are put, and the quality of the materials, it is well for us to visit a sawmill, a carpenter shop, a stone quarry, a brickyard, a planing-mill, a stone-cutter's, a tinner's, a plumber's, and a lime-kiln. It is especially desirable to observe the work upon a house in process of construction. A connected description of each of these places should be given by the children after observation. It is systematic school work. A few excursions to these places are necessary, children and teacher together. We observe, also, and describe

the tools and machines used by the men in their different occupations or trades.

3. The third topic, *clothing*, will have to do with wool and leather, and any other raw materials, as furs, that are produced in our neighborhood; also, the home animals that yield leather, wool, and fur, also the tanneries, shoe-shops, woollen-mills, and any other local industry bearing on this subject. An explanation of the process of weaving by which the fleeces of wool are converted into woollen cloth or blankets is quite practicable at this point. The same as to *tanning*. Secondly, we would discuss cotton, silk, linen, straw, and rubber goods which are brought from a distance but are familiar in daily use. Our purpose, however, is not to discuss these topics exhaustively at this point.

Besides the occupations already mentioned, nearly every city or town has some special *local industries* worthy of mention, such as wagon-works, paper-mills, a shoe-factory, glass-works, machine-shops, foundery, basket-factory, etc. It is well, also, to call to mind the great *variety of occupations* in any town besides those already named, as grocers, bankers, dry-goods merchants, doctors, engineers, wholesale dealers, blacksmiths, watchmakers, tailors, etc.

4. Our fourth topic, *roads, bridges, and local commerce*, stands in close relation to the previously discussed occupations. The chief wagon roads by which the farmers, gardeners, dairymen, quarrymen, and



wood-cutters bring their produce to market, are not only remembered and described by the children, but these, with a few of the main streets of the town, form the nucleus for a map of the neighborhood. Farmers and others bring their loads into town for sale, and with the profits thus gained buy and carry back with them such things as they must have from the city. In this way the idea of a town as a trade centre for receiving the raw products of the surrounding country, and in turn distributing groceries, clothing, tools, and many other things to the farmers, is made clear. The chief railroad lines to the neighboring villages or towns should find a place on our map as it is gradually outlined. These furnish ideas of commerce on a larger scale, and between villages and a larger town. If our town lies on a navigable river or canal, a knowledge of the boats and their cargoes is of importance.

5. The fifth topic that requires a detailed treatment is *local surface features*. Some may prefer to put this subject earlier in home geography, and to this there is no objection if the season of the year is favorable. If any stream flows near the home, all the leading facts connected with such a watercourse should be observed and described, for example, the current itself with its shallows, rapids, and deeper places; the sand-bars, bottom-lands, and bluffs, sloping and tree-covered or steep and rocky; the old channels and lagoons; the river as seen at different seasons,

floods, high and low water, uses of the river in winter and summer, the river commerce, if it is navigable ; the whole river valley with its irregular course as seen from some commanding point. Then there are the smaller streams and valleys opening into the larger. Up these valleys, roads are laid out into the uplands. In some places the bottom-lands are rich and productive, in others sandy or flooded. Erosion, or the wearing force of water, can be clearly seen. Then there may be wooded slopes, brooks, and springs, rocky cliffs, and picturesque outlooks, the regular layer of rocks, and the caves in the sandstones. Even along smaller streams many of the characteristic objects of a watercourse may be discussed. There are many other surface features which we may observe best near home. The idea of the forest and of the prairie may be distinctly formed, meadow and cultivated field, hill and mountain, valley and plain, ridge and watershed, island and lake, waterfall and mill stream, difference in soil and consequent differences in products. If we understood how much all future geography study depends upon this use of home materials, we certainly would not neglect them.

6. The sixth topic is *home government*. The town hall, the court-house, and the officers there employed, furnish the best starting-point. What duties have these people to perform, — the mayor, the town council, the county judge, and county treas-

urer? What does the town council meet to discuss and decide? (waterworks, streets, police, improvements, taxes, etc.). It is not the abstract but the concrete treatment of these subjects that children need. Beginning with the objects and persons we see, we are to interest them in these things still further.

7. Still a seventh topic of home geography is found in the observation of sun, moon, and stars, and seasons, the varying length of day and night, and the changing position of sun and moon. We forget that these grand object lessons, some of them the most beautiful and imposing, belong directly to the child's home and are a part of it. Such are a few of the more noticeable constellations, the clouds and storms, cold, heat, rain, and their effects, the sunsets. These ideas lie at the basis of mathematical geography and climate, just as some of the other topics contain the concrete elements of commerce, surface, and government.

A brief survey of the topics thus far suggested in outline will show that the children by personal inspection and experience have become acquainted with the common staple necessities and leading occupations of men, as farming, mining, manufacturing, trade, and with many lesser ones; that the idea of commerce and a trade centre has become clear. Definite ideas also have been formed as to a river, brook, hill, forest, prairie, field, lowland, valley, island, slope, watershed, etc. Clear notions of town and county

government have been reached, while climate, the seasons, and the phenomena of the weather, have not only been seen, but closely observed. There is scarcely a topic in subsequent geographical study which does not find a sure, concrete footing in this preliminary work. If there is any value in careful, personal observation or in the principle of going from the known to the unknown, it is fully illustrated in the successive grades of geography study. The home constitutes the first great unit in this branch of work.

#### EXCURSIONS

It is difficult to see how a successful study of the home neighborhood can be carried on without excursions. A single excursion will often supply abundant materials for instructive discussion for two or three lessons. Any attempt to discuss the same topics, without the basis of real observation, which the trip supplies, will soon grow formal and unattractive. There is much variety of surprising knowledge to be gained by stepping from the schoolroom directly into this great world of realities. The ignorance of most so-called intelligent people of many important things about home is matter for surprise. It is an extremely faulty training that allows us to pass by so many of these things without any desire or effort to understand them.

When we come to study the climate, surface, industries, products, and commerce of distant states and of

foreign countries, our ability to understand and construct correct pictures is based upon the varied ideas of similar kind that we have gathered in vivid and real form from our home neighborhood. The imagination must be our chief helper in constructing geographical pictures after leaving home. But the imagination cannot construct pictures out of nothing any more than a builder can construct a house out of air. The imagination works with the materials of experience already gathered. It is not expected that we should gather all the experimental facts we may need in third-grade excursions. We can do but little more than open the door into life and its varied forms, but we can make a useful beginning.

Excursions with groups of school children need to be well planned. The teacher must know pretty clearly what are the chief objects to be seen. It should be as definitely planned as a lesson. If possible, the place would better be visited beforehand by the teacher. During the excursion it is often desirable to get the children together and direct their attention to certain objects or processes, then take them aside for question and inquiry.

After returning to school (the next day, perhaps), the observations gathered upon the excursion should be related in class, explanations made, faulty notions corrected, and many ideas brought out more distinctly. Such a discussion may be as helpful as the excursion

itself. Many ideas connected with the business or place may be brought home to their minds, which were not seen or noticed at the time, but which may be very important for the understanding of the whole subject. If a factory is visited, the kinds of materials used and where obtained may be investigated.

*Drawing* the objects, machines, or processes seen is an excellent means of making more vivid their observations. In visiting shops, factories, buildings, and even in nature, many objects will be more clearly formed in mind if the practice of drawing is frequently resorted to—not æsthetic drawing, but mere sketching, diagramming, and picturing objects in a crude way. It may be well, also, in the drawing lesson proper, to take some of these objects for more accurate reproduction. But we had in mind not the drawing lesson proper, but the sketching for help in understanding and remembering facts and objects.

There are many serious *difficulties* in the way of a general introduction of excursions:—

1. It has not been the custom to make such excursions for purposes of instruction. It is generally supposed that children will pick up this kind of information without aid from teachers.

2. It is difficult to manage large classes out of doors. It is hard enough to keep children busy with good work in school. Get them outdoors, and the burden is doubled. Children are more difficult

to manage in the open air than in a schoolroom. They take liberties, etc. It is a real burden, oftentimes, to go upon an excursion with a large class of children. Over against this difficulty there is one considerable advantage. A teacher who wishes to know and understand her children can oftentimes do it much better outdoors or upon a journey than in a schoolroom. They are more free to express themselves. Moreover, when the right spirit prevails, children and teacher come closer together and arrive at a better understanding and sympathy with each other when abroad. Even if a teacher can't get away with children more than once a term, it will be a new experience that will add much to the interest of school life.

3. There are dangers connected with visiting factories and workshops. Great precaution in this respect is necessary. A single unfortunate accident would outbalance a great amount of good. A teacher should be very watchful to prevent any accidents. In mills and shops, where machinery is used, it is better not to take more than a dozen or fifteen children at a time, and to look out for their safety. Even in excursions, where no danger is present, a teacher should be watchful and careful not to overexcite or overstrain the children. In climbing the stairs to get to the cupola of a large school, one little girl became timid and nervous, and was taken back to the lower rooms at her request.

## EXAMPLES OF EXCURSIONS

## TRIP TO A PLANING-MILL IN BLOOMINGTON

1. Preparation for the trip.
2. Trip by street-car.
3. Visit to a planing-mill:—
  - a. The planing-machine.
  - b. The circular saw or buzz-saw.
  - c. The scroll-saw.
  - d. The band-saw.
  - e. The turning-lathe.
  - f. Machine for making door panels.
  - g. The engine room. Bands. Shaft.
  - h. General view of storehouse, lumber-yard, etc.

1. *Preparation.* — Notice was given to the children that on the following day a trip would be made to the planing-mill, and they should get permission of their parents before going.

At 2:15 P.M. the next day, seventeen children out of a class of nineteen set out under the direction of the teacher. Taking a street-car, they soon came within a block of the planing-mill.

Before entering the mill the children were fully cautioned against touching the machinery or getting too close to wheels or bands. The teacher then inquired at the office of the mill to secure permission to go through the shop. The teacher then



glanced into the mill to see where to begin the inspection of machines. It is necessary to keep the children together, to call their attention to the special points.

*a.* The first process observed was the planing of rough boards at the planing-machine. The effect could be seen as the board came through smooth and bright on one side. But the process could not be seen, as the knives were covered up by the large pipe that carried away the chips or shavings.

*b.* A band-saw was next examined as it stood motionless. The children, at first, failed to notice how the saw circles about the two wheels. The workman then applied the power, and sawed out a number of brackets.

*c.* A scroll-saw was also observed, both at rest and in motion. The up and down movement was seen, and several pieces of scrollwork turned out.

*d.* Several circular or buzz saws were examined in action as they sliced up inch and two inch boards. They were also used in sawing up pieces of board of specified length.

*e.* A turning-lathe was closely observed as the workman chiselled off a post for a porch. The skill and beauty of this work were surprising.

*f.* Three machines were also seen in motion as they mortised and turned out door-panels.

Several other machines were not in operation, and therefore were not more closely studied.

*g.* We all passed into the engine room to observe the belt which transfers the power from the engine to the main shaft that runs the whole length of the mill. After seeing this source of power we passed again into the main room to notice again how the wheels ranged along the main shaft are supplied with belts which carry the power to the different machines.

*h.* Passing out of the planing-mill, we stopped for a brief review of the chief machines and operations observed. We also took a survey of the lumber-yard, the great chimney, and the storehouse where the doors, sash, and other fine materials manufactured in the mill are stored.

In passing along the street we came to a long, two-story, brick livery-stable in the process of construction. It was very wide, with a heavy framework of wooden timbers as interior support. This building gave an excellent chance to observe two things. First, two rows of heavy posts, a foot in diameter, supporting two heavy beams extending through the length of the building. Upon these beams rested the foot-wide joists, whose other ends were built into the brick walls at the side. A better opportunity to see clearly the interior frame of a large building could hardly be found. Secondly, a single horse was being used, with a wheel and pulley, to lift loads of brick and mortar to the builders who were at work upon the second story.

The upper and lower wheel could be distinctly seen, also the movement of the rope and load. This is not only a good typical illustration of the rope and pulley, but also of the idea of horse-power, which is so often referred to.

When one is out upon excursions with children it is well to take advantage of such incidental object lessons as are thus offered. We might travel many miles without again meeting such an opportunity as was thus thrown in our way.

In the next geography lesson in the schoolroom the main objects which were seen upon this excursion were thoroughly discussed. It will be found that many things which were supposed to be clear to the boys and girls were not so. Many things, also, which were not clear, can be made so to the children. Sketches and diagrams were made both by teacher and pupils.

The whole time occupied by the excursion, from the time of taking the street-car till we got off at home, was two hours and twenty minutes. If it had been desirable, the time could have been shortened to one hour and forty minutes.

The pine boards and different kinds of wood used in the planing-mill were noticed, and attention called to the railroads which bring these materials from a distance. The relation of the planing-mill to the work of contractors and carpenters in house-building was discussed in the class.

## TRIP TO THE CUPOLA OF THE NORMAL BUILDING

1. View to the west.
2. View to the east.
3. View to the south.
4. View to the north.

In the cupola of the Normal School building, we are lifted above the tops of the highest trees in the campus, and can look abroad over a wide area of what was once a prairie country. Looking first to the west, we see a characteristic farming country of the prairie region. There are groves of trees about the farm-houses, and fields of different kinds, as corn, oats, and pasture. To the northwest lies a prairie with but few trees, rolling and stretching away for many miles. We can trace the main road westward, and as the eye follows it to the western horizon we see a line of black. It is the woods about eight miles west of Normal. This natural forest stretches from the south along the western horizon for many miles.

Passing to the opposite side of the cupola, we look down upon the scattered village of Normal, in summer time so embowered in trees that few houses can be clearly seen. The whole town has become a grove of maples and elms, but when the leaves are fallen we can see the chief streets, the two railroads, and the station at the junction, the stores, the big barns and windmills, and to the northeast a mile away the Soldiers' Orphans' Home. Beyond the

town to the east, the road climbs some long hills as it rises to the higher prairie country beyond. To the east in this direction can be seen the nursery and the stock-yards.

Turning to the south, we have a city before us. Two miles away we can see ten or a dozen church spires, the court-house, the Wesleyan, the smoking chimneys of the big car-shops along the Chicago & Alton Railroad, the stove foundry to the southeast on the line of the Illinois Central. The tall water-tower of the Bloomington waterworks is the highest object in the whole landscape. The line of the Chicago & Alton, and also of the Illinois Central, can be distinctly traced, as well as the street-car line between Normal and Bloomington.

The culverts can also be seen where the little stream that drains the town of Normal passes under the railroad.

Turning our eyes out the north window, we again have a prairie country, sloping upward. There is a steady slope for three miles or more from the north southward to Sugar Creek. Beyond the creek toward Bloomington the road rises somewhat abruptly, leaving a perceptible valley between Normal and Bloomington.

It is necessary to discuss these matters closely with the children, so as to give their observations clearness and accuracy.

When we consider the variety of typical objects seen in such a view of the country as this, it proves

its utility. Prairie, forest, cultivated fields, railroads, factories and shops, country roads, bridges, and the churches and buildings of a city furnish important elementary pictures. A second lesson in class should give the children a chance for a full description and discussion of these objects.

With this survey of the surrounding country as a basis, the teacher and children should draw a map of the region observed, laying out the campus as a centre, the chief wagon roads and railroads, and locating upon it the leading points of interest already discussed. This should be worked out on a fixed scale, taking some familiar half-mile or mile stretch as a standard of measurement.

#### VISIT TO A DWELLING-HOUSE IN PROCESS OF CONSTRUCTION

1. The cellar, basement walls.
2. The framework.
3. The sheathing, weather-boarding, flooring, shingling.
4. Window-frames, doors, and casings.
5. Plastering, slaking lime.
6. Tinning, spouting, cistern.
7. Painting.
8. Chimneys, heating, ventilation.

In the spring or fall some dwelling is usually in process of construction within a block or two of the school. With a third-grade class it is advisable to

make perhaps three excursions of half or three-quarters of an hour each to such a house in process of building.

When the foundation is just complete or, better still, while the masons are at work upon it, notice the depth and extent of the cellar, the materials and tools used, windows, and door-frames. On the return from the first excursion describe the materials and work seen. Draw also the ground plan of the basement, using the foot or yard as a standard of measurement.

The second trip may be made when the framework is toward completion, so that the posts, joists, beams, studding, and rafters may be seen, and how they are mortised or nailed together and rested upon the brick foundation. Notice the joists of the second story; also the rafters of the roof and how fastened at the ridge and sides. The manner of setting in door-frames and window-casings may be seen.

A third trip may be made to observe the lathing, plastering, and interior finish. The slaking of the lime and mixing with hair are also instructive in the preparations for plastering. Later we may observe the finer work of interior finish, painting, graining, decorating, papering, etc.

The material and tools used in all the processes of building should be seen and understood. The preparation of materials at the carpenter shop, planing-mill, and tin-shop should be noticed. The different

trades involved in building, as of masons, carpenters, tinnern, plumbers, painters, contractors, and millmen should be appreciated, each in its specialty.

Each excursion, of course, will be worked over in the schoolroom, with such descriptions and drawings as are needed to bring out clearly the facts observed.

#### LIST OF POSSIBLE EXCURSIONS

1. *House-building*. — Materials, trades, tools.
2. *Gardens*. — In spring and fall. Tools, vegetables.
3. *Nursery*. — Fruit and shade trees, grafting.
4. *Feed-mill*. — Corn-sheller.
5. *Blacksmith and wagon-maker*.
6. *Tinner*. — Soldering, tools, machines.
7. *Grocery store*. — Variety of home and foreign products.
8. *Shoemaker*. — Tools, kinds of leather.
9. *Cupola of schoolhouse*. — Slopes, towns, fields, etc.
10. *Miller's Park*. — Trees, wild animals, creek.
11. *Planing-mill*. — Machines, processes, products.
12. *Court-house*. — Records, court-room.
13. *Grain elevator*. — Belts, pockets, bins, chutes.
14. *Cooper shop*. — Hoop poles, staves, tools.
15. *Wagon-shop*. — Woodwork, ironwork.
16. *Foundery*. — Moulds, filling the moulds.
17. *Hothouse*. — Construction, heating, plants.
18. *Waterworks*. — Engine, pipes, tower.



19. *Carpet-weaver*. — Threads, shuttle, frame.
20. *Printing-office*. — Setting type, printing-machine.
21. *A bakery*. — Kneading, the oven.
22. *A stone quarry*. — Drilling, blasting, hauling.
23. *Bridges*. — Wagon bridge and railroad bridge.
24. *Soldiers' monument*. — Park, history.
25. *Machine-shops*. — Engines, cars.
26. *Flour-mill*. — Water-power or steam-power.
27. *Brick-yard*. — Making bricks, the kiln.
28. *Canning-factory*. — Tomatoes, corn.
29. *A natural forest*. — Kinds of trees, location.
30. *Gasworks*. — Coke, furnaces, tank.
31. *A dairy*. — Churn, cheese-making.
32. *Furniture factory*. — Materials, machines.
33. *China store*. — Kinds of ware.
34. *Tannery*. — Vats, bark.
35. *Woollen-mill*. — Washing and picking, carding, spinning, weaving.
36. *Sawmill*. — Logs, saws, stacking.
37. *A windmill*. — Pumping water.
38. *A hardware store*. — Farming machinery.
39. *A bluff or hill*. — Watershed, slopes.
40. *Stream*. — Banks, floods, erosion.
41. *Shoe-factory*. — Division of labor, machines.
42. *The lake-shore or sea-shore*.
43. *A fruit store*. — Sources from which fruits are obtained.
44. *Visit to a schooner or steamer*. — Cargo, voyage, sailors.

More than half of the above-named excursions have been made with classes by the author, for school purposes. This list may be considerably enlarged. In almost any village neighborhood it would not be difficult to find twenty places adapted to instructive excursions. But even if but a half-dozen such trips can be made during the year, they will prove valuable in several ways.

Some of the excursions in home geography treat topics which lead out in an interesting way to the larger world beyond the home.

In visiting a house in process of building or a lumber-yard we naturally inquire where the lumber comes from. In New York State, children should be shown on a map how lumber is brought down from Canada and Lake Champlain to Albany and distributed southwards. A map of the United States or of North America is needed to give the full answer to this question. In visiting a fruit store the children see apples, oranges, and bananas. When this is discussed in class, a map of the United States and North America is needed to locate the apple-producing states, New York, Michigan and Missouri, to see where oranges are raised in Florida and California, and to trace back the bananas and pineapples to Jamaica and the West Indies. In the same way we have occasion to locate the oyster-beds in the Chesapeake and Long Island Sound, the sugar-cane fields in Louisiana, the hard-coal fields in Pennsylvania, the

beef-producing regions on the Western plains and cattle-ranches, the Georgia pine for our houses, in the Southern states, the peanut lands in Arkansas, the salmon in the Columbia River, salt in Central New York, etc.

Even a globe and a map of the world will be needed in the third grade to locate Japan and China as tea and silk producing lands, Brazil as the land of coffee, the Mediterranean countries for olive-oil and dates, Germany for beer and sugar, Italy for macaroni, hand-organs and fruit-venders, France for wine and silk, etc.

This study of foreign lands in early grades need not be forced prematurely upon children, but as occasion rises in these home excursions it will be interesting for them to locate the countries from which various products come. Of course, the children will not at first understand the globes and maps. Distances, directions from the home, and the meaning of lines and colors on the map will call for careful explanation.

Throughout the lessons in home geography in the third and fourth grades, there will be many opportunities for making these brief excursions into the great world beyond, arousing curiosity and paving the way for later studies.

In the fourth-grade geography there are three additional avenues of approach to the large world beyond the home neighborhood.

1. A few leading topics of the home state, such as the Hudson River, Erie Canal, Adirondack Moun-

tains, dairying and fruit-raising in New York require a study of the map of the whole state and to some extent of those adjacent to it.

2. A few simple descriptive topics of a picturesque and outstanding character touching up some of the more pronounced features of North America: for example, a description of striking scenes along the Atlantic coast from Newfoundland to Florida, including the fisheries, the rocky coast of Maine, the summer resorts and sea-bathing, the oyster-beds, the waterways of the Carolinas and Florida, the winter resorts of the South, the lighthouses and life-saving stations, the great harbors and fortresses for shore defence. Another topic would be a summer among the lakes and mountains of New England, or a trip down the Mississippi from Itasca to the Delta, or life among the cattle-ranches of the Western plains and foot-hills, or a winter in Florida, or travels among interesting scenes and famous resorts of the Rocky Mountains. Reënforced by good pictures and descriptions, a few large, easily comprehensible topics of this sort might serve as a hopeful introduction to the geography of North America.

3. Several large geographical units are suggested by the pioneer histories which are handled in fourth grade: for example, the more striking points in the physical character of the St. Lawrence River and of the Great Lakes including their value to the Indians and early explorers; the dangers and toils of

a sailing voyage across the Atlantic in the days of Hudson and John Smith; the great forests of the Atlantic states in the early days of settlement, clothing plains, and mountain sides; the fisheries on the Banks and their influence upon early voyages and trade; the bays, rivers, and mountains of Virginia in connection with Smith's adventures; the difficulties of crossing the Alleghany Mountains in early days, including the river valleys, water-gaps and water-sheds.

In addition to the above variety of geographical topics in fourth grade, several of the stories of European history and the narratives of early explorers from England, France, and Holland will direct attention to the geography of Europe and its chief countries. All the history stories both in America and Europe should be clearly grasped in their geographical environment, with such study of maps and blackboard sketches as will leave clear and strong impressions. While the geographical and historical studies should be kept clearly distinct from each other, so that each has its own well-defined series of topics, the close and necessary relations between the two should be emphasized in each study.

#### THE EARTH AS A WHOLE

Besides the seven topics of the home environment, there should be, in the oral work of third grade, a discussion of *the world as a whole*.

Different-sized globes may be used to bring out the idea of the earth as a sphere. The continents and oceans may be located, the hot regions of the equator and the cold, polar regions described, without entering into mathematical geography. North America should be examined a little more in detail, and our own home state located in its proper relation to the whole country. It seems to us better to leave out of third grade the explicit discussion of the earth's motions, the causes of the seasons, latitude and longitude, and the general forms of contour and surface given even in our elementary geographies.

The purpose of this study of the earth as a whole is to get a bird's-eye view of the earth and of our own position and relation to it, so that we are prepared to move out from the home with a clear knowledge of our bearings and a simple understanding of the whole earth upon which we live.<sup>1</sup> It seems clear that only a few lessons need be given to this study of the earth as a whole, and that by far the greater part of the time in third and fourth grades may be put upon the study of home objects.

There are several reasons why children's early horizon of geographical study should not be limited to the immediate home neighborhood. Even

<sup>1</sup> A few lively oral drills with the whole class in naming and locating the continents, oceans, chief countries, and regions of the world will quickly fix the essential points in mind. Left alone with their books at this early age, children dawdle, squander time, and form bad habits of study.

before entering school, they have heard of the earth as a big ball. The Robinson Crusoe story in second grade carries them across oceans and into new regions. The "Seven Little Sisters," read in third grade, is an effort, in story form, to realize some of the characteristic features of the whole big earth. Many of the myths, traditions, and Bible stories lead children to distant portions of the earth. Finally geographical study in every grade must be both analytic and synthetic. It must begin at home and work outward gradually, and it must also grasp the earth as a whole and begin to analyze into parts. In our fourth-grade plan we shall attempt to show that the fundamental movement should be from the home outward; but it will be necessary, at intervals throughout our progress, to take broad surveys of the earth as a whole, of continents, oceans, and large areas. Such broad surveys are necessary to keep our bearings and to prevent a blind movement into unknown regions.

The study of primitive life seems appropriate to children in the third grade. It deals with the simple modes of life and industry among early peoples, or among races which remain in the primitive state of culture. These stories of primitive life are large object lessons in which the scenery of simple-minded men in contact with nature is brought out.

In our own continent we have several illustrations of this crude life of the early races, in the Indians of the plain, in the Zuni villages of the Southwest, and in the

Eskimo homes of the North. A description of their houses, domestic utensils, food and modes of preparing it, clothing and how made, hunting, fishing, agriculture, and family life, their use of domesticated and wild animals, fruits, plants,—all these are simple and typical of fundamental arts.

The reproduction of these arts in pictures, models, and material constructions, the use of the mortar and pestle, the simple loom for cloth-making, the preparing of foods, the making of houses or tents, of weapons and common tools, furnish the children with appropriate and interesting manual activities.

The primitive life of Europe and Asia has been made also the basis of such studies among children, as that of the patriarchal times, of the Persians, Egyptians, and Greeks. The primitive arts and industries of these early races have been employed as an introduction to history and industry.

A sort of alphabet of this early life is given in "Seven Little Sisters." This book can be used to good advantage in the third grade (winter term) to introduce children to some of the chief countries of the world, to the people who inhabit them, and to those beginnings of racial life in the family and to common occupations which form the basis of society.



## CHAPTER IV

### GEOGRAPHY OF FIFTH AND SIXTH GRADES — TYPE STUDIES OF NORTH AMERICA — ILLUSTRATIONS

THE lessons of the fifth and sixth grades are mainly devoted to a study of the United States and North America. In addition to this the historical stories relating to Europe call for the explanation of a number of large and important geographical topics, while mathematical geography in the latter part of the sixth grade brings into prominence some of those more difficult problems of the earth's motions, the changing seasons, latitude and longitude, which need to be clearly mastered.

The importance of the full study of the United States and of North America as a whole at this stage of the course needs to be clearly demonstrated. It is the second of the four great stages in geographical study.

1. The first reason that may be assigned for this emphasis of the United States is that it is the one country above all that we need to thoroughly understand. We shall have more dealings with it in all sorts of ways than with all the other countries com-

bined, and these dealings have to do with the essential labors and pleasures of life. An understanding of the physical and social conditions that surround us in America is fundamental to any intelligent and practical appreciation of our duties and opportunities as citizens of the world.

2. Again the United States is not a small and secluded corner of the world, where only a few things come to light. We are almost in the centre of the highways of the world, and there is displayed about us a great profusion of the most instructive and delectable geographical topics. Our wide-spreading plains and forests, our canals and rivers, mountains and lakes, our varieties of climate, coast-line and products, our cities, and teeming industrial life, furnish an almost bewildering variety of great geographic object lessons.

3. The topics already treated in connection with home geography are especially adapted to introduce the children to the larger subjects of American geography. The conversations of the home, the incidental mention of cities, rivers, mountains, and states not far distant have partly lifted the veil from the great world abroad and have aroused the active curiosity of the children. Before the children of New England proceed to a full and definite study of topics on Europe, Africa, and South America they should have their curiosity satisfied in regard to the Maine woods and lakes, Boston and its famous buildings and harbor, the

Hoosac Tunnel, the oyster-beds of Long Island, the granite quarries and maple-sugar camps of Vermont, the big mills at Lowell and Fall River, the White Mountains, and Lake Memphremagog. This involves a natural pedagogic movement, and hardly needs a further argument.

4. We wish to understand the chief physical objects and industrial processes as springing out of the conditions and environment of American life. This must be based upon a continuous journey from the home outward, building as much as possible upon experience.

We are undertaking the serious problem of understanding industrial and social life as influenced by physical surroundings. If we were merely learning the names of cities, rivers, mountains, etc., we might as well begin with England or South America. But we are chiefly concerned to probe beneath the surface and get at the meaning of a few of the more important geographical names. This makes us, therefore, much more cautious in our selection of topics at the moment of leaping from the home into the big world beyond. By a full and accurate description of a few large American topics, closely related in important ways to home topics previously worked out, we hope to bridge over this gap between the home and the lands just across the border. Let us not be in haste to get into Africa or Australia if we can only plant our feet firmly in American soil. In the end we shall the better understand Africa and the islands of the sea.

5. One advantage of first ploughing our own fields, climbing our own mountains, and investing in our own factories, is that America is generous in simple geographical lessons; she throws out before our eyes, with a liberal hand, a few large, simple topics. Our corn and wheat fields are broad and many aced and their products bulky, our forests and lumber-yards are almost monstrous, our cattle-ranches are big enough for counties, our cotton-fields expand broadly under the Southern skies, and a bale of cotton can be seen a mile away. The Great Lakes, Niagara Falls, Colorado Canyon, Yosemite Valley, and the Mississippi River are big and simple. Our traffic routes by land and water are huge, continental; our manufactures are largely of the coarse, crude kind. Even some of our large cities are centres of trade for a very few bulky staples, as with Kansas City, Minneapolis, and others. Mere bigness is not a thing to boast of, but when combined with simplicity it is very suggestive to the teacher of geography.

In selecting a series of topics for the fifth grade we may show a jealous preference for these giantlike topics of our American world.

Moreover, in the fifth and sixth grade history lessons (dealing with early exploration and settlement) we are compelled to keep a sharp eye upon the strong physical and climatic surroundings of the settlers. The term "physiography" is hardly strong enough to express the biting reality of physical surroundings in pioneer

life. Nowhere else does physical geography so uncover its crude strength. Many of the pioneer stories, like those of Frémont, De Soto, Hudson, La Salle, Lewis and Clark, Robertson, and others, are unrivalled for the sharpness of their geographical impressions. A number of large geographic topics of a pronounced physiographic character (suggested by the history stories) should be worked over in these grades, such, for example, as the Columbia River, the trade route to India, a trip down the Ohio or Mississippi, the Equatorial Current, trade-winds, and Gulf Stream, and others. This close connection of history with geography is valuable also because it brings out the marked physical features of the country in their simplest relations to men.

In the sixth grade some of the more complex topics of American trade, manufacture, and government may be handled, and difficult ideas of mathematical geography worked out. Such large and complex units of study as the Rocky Mountain system, the entire Mississippi Valley, the whole Appalachian highlands, and a bird's-eye view of the physiography of North America should be reserved for the latter half of the sixth grade. This effort to build up a well-graded series of geographic topics through the fourth, fifth, and sixth grades (confined chiefly but not wholly to North America) is deserving of the serious study of teachers. The great variety of conditions in this country, from the simplest pastoral life of the plains

with its sparse population to the thickly peopled manufacturing districts and cities of the East, displays a full range of subjects from the simple to the complex.

Despite this early preference for America, an examination of the topics selected for the course of study for these grades will bring to light a goodly number dealing with Europe and the world-whole. The topics suggested by the European history stories, and by the world navigators, also in connection with mathematical geography, are quite sufficient to bring many other lands and the world-whole before the minds of the children.

In order to bring simplicity and order into the vast multitude and variety of facts, furnished by the geography of North America, we need to grasp clearly the significance of types. A single leaf on a hard-maple tree is so much like all other hard-maple leaves that one may name it at a glance. If a stranger to the hard-maple should notice sharply a single typical hard-maple leaf, he would be able to recognize nearly all others. In the same way Mount Shasta as a typical volcano, if well understood in its structure and history, is able to explain nearly all volcanic mountains. The same truth applies to most geographical objects. The number of classes of geographical objects is not very great, while the number of individuals in each class is legion. If we can convince ourselves that the thorough mastery of a relatively small number of important type objects goes a long way toward the

mastery of the whole wide and varied field of geography, we may find it an excellent means of unburdening the mind and of subjugating the world to our thought. Those persons who thoughtlessly gorge the memory with geographic names and facts are like children collecting shells by the seaside. They fill their baskets, pockets, and hands with specimens in their zeal for collecting and then, being overloaded, begin to drop them. In sorting them out later at home, they find only a few kinds and, after selecting the best, they soon cast the others aside.

In devising a plan for geographical study at least two important problems must be met:—

1. The selection of a few important representative ideas out of the countless multitude of facts.
2. A method of approach to these ideas which shall instruct and interest the children.

The quantity of geographical knowledge is practically infinite, a hundred times what any child can master. A wise choice of matter is, therefore, imperative.

A proper study of types offers, we believe, a clear solution of both these problems.

If not more than *twenty or thirty topics* are taken up during the year, from one and one-half to two weeks can be spent upon each topic. This is time sufficient to give to each important subject a reasonably exhaustive discussion.

Now, what are the advantages of such a discussion of really important types?

1. A clear and detailed comprehension of a typical object in geography (however small this object may be) is the key to a large area of geographical knowledge. This type, once clearly perceived, is the interpreter of very many similar objects. A single coal mine seen in itself and in its relations to the busy world is an almost perfect type of thousands of coal mines, to say nothing of other mines. A single river or mountain, pictured out in its variety of relations, is a sure exemplar of many others of the same kind. It is to be remembered that we should always select the best types for full study. The study of a type is, therefore, a short avenue to the interpretation of a large body of knowledge.

2. A type subject is the basis of a series of comparisons. The representative or type idea which it illustrates appears again and again in a multitude of kindred objects. A full graphic account of the Illinois River from its source to its mouth is found, by later comparisons, to be a pretty fair description of a score of other rivers in the United States. In the same way the logging industry in one camp and along one stream is representative of such camps throughout the whole of the pine forests.

If, therefore, we are careful to select good types and then, after treating them fully, to make sufficient comparisons to show the modifications of the type in different localities, we shall gain speedily an instructive insight into large areas of geographical knowl-



edge. The original type subject becomes then a standard of measurement for the multitude of similar subjects that are sure to come up. Such a clear type is an interpreter and a test of each kindred subject the moment it appears. The extension of a typical idea by means of comparisons is a good opportunity for the children to think and to reason for themselves; if it is a study of rivers, to examine the map and to interpret the slopes and structure, commerce and cities.

Comparisons on the basis of fully developed types are the best means of *review*. Reviews by means of comparing old with new topics are a vigorous and stimulating exercise. They throw new light on the old facts; they interpret the new. They group and consolidate geographical topics and develop the power to classify and organize knowledge.

3. The number of type studies being few, much time is available for a lively, descriptive, and interesting investigation into details. Pictures and instructive particulars are abundantly supplied. The work becomes very realistic and, as we say, concrete. Herein is found the very life of all instruction. Our text-books are usually stripped bare of this foliage and fruit of the tree, and a good teacher, from her own experience and from geographical readers, etc., should manage to supply it.

It need scarcely be said that a full treatment of a topic like the pineries or the coal mine, is thoroughly

instructive and interesting to children. It satisfies a true thirst for knowledge. It explains a hundred facts they are anxious to know about. Instead of giving them a few barren statements to memorize, it responds to a child's inquiries with a liberal supply of nourishing and palatable information.

This detailed study of a type keeps us close to the objects and realities of the workaday world. We are not lost in general statements and abstractions, but are bumping constantly against the varied facts of experience. In other words, there is a powerful realism in this kind of study which gives a healthy tonic effect. The worst criticism that can be brought to bear upon our present teaching of geography is that it is abstract and unreal. It is formal and dry. We are not to forget, however, that, while such a type is very real and concrete, it contains a general truth of wide application. This general nature of the type, and the extent of its application, should be seen before the discussion is dropped. Skill in teaching nearly every subject depends upon the teacher's power to show the relation between the general truths of a subject and its particular objects and facts. The *type* is the true mediator between these two extremes.

#### 4. The study of causes and causal relations.

One of the chief reasons why children are interested in such a study of a type is, that it is, at every step, a study of causes. Children are often concerned

about facts, but they are still more inquisitive about causes. Unless their schooling has been very bad, they are strongly inclined to reason out the causal relations. In the study of the pineries, for example, every step in the process of lumbering from the skidding of the logs in the forest to the unloading of lumber on the Western prairies is an adaptation of labor, skill, and machinery to the physical conditions imposed by surface, climate, rivers, prairies, etc., a tracing of cause and effect. It is a fine thing for children to see this application of labor and skill and to have their interest strongly awakened in many forms of human endeavor. We should realize, however, that causal relations cannot be clearly seen unless a topic is treated with fulness. Our geographies give us a few barren, meagre facts, too much stripped of detail to show their relations. By means of the more exhaustive treatment of a typical subject, we see it in its varied causal relations, we perceive the modifying or controlling influences which determine its character. In each of the examples given, Illinois River, coal mine, prairies, pineries, etc., the links which connect different topics together are welded by a perception of causal relations. But what is true of these topics is true of every typical subject which is delineated with sufficient fulness to reveal the true causal sequences. This is the point at which outlines or brief epitomes utterly fail. They may state important facts, but they cannot reveal the causal nexus.

It is necessary to enter upon the deeper details in order to catch a glimpse of working causes.

But this more penetrating study into a topic brings us in close contact with other branches of knowledge, and so we come to see the importance of the relations of geography to other studies. A full investigation of a coal mine, for example, shows plainly how the roots of geography are intertwined with the roots of other sciences. Children are almost certain to ask how coal came to be stored in the earth, a question which leads back into the history of the earth's crust, into atmospheric and climatic conditions, into plant life and to great physical and chemical changes. The use of powder and other explosive materials in blasting, the collection and explosion of gases in mines, the safety-lamp and mine ventilation, the steam-engines, pumps, and ventilating-fans, the combustion of coal, the production of coal-gas, etc., are topics that belong to physics, chemistry, and practical mechanics. So many and intimate are the linkings with other studies that the chief danger of such an exhaustive treatment of a coal mine is that both teacher and class may be switched off the main geographical track, and get lost in the history of geological changes, in the chemical composition of coal, in the physics and chemistry of the atmosphere and of explosives or in some other purely scientific topic. The only safety is to grasp firmly the main outlines of the geographical subject and to treat all these

other sciences, however intimate, as tributary and incidental. So far as they directly explain geographical facts they should be drawn upon.

To further illustrate the significance of these causal relations of geographical topics to each other, and to the natural sciences, suppose we give a full description to Pikes Peak and vicinity, including the vale of Manitou, the mineral springs, the Garden of the Gods, Cheyenne Canyon and Falls, the caves, the trail to the peak, the views of distant mountains, the snow-line, the rock-strewn summit, the vegetation, winds, air-pressure, the stratified and igneous rocks, the gorges and mountain torrents, the surrounding mountain groups, the railroad to the summit, the peak in winter, etc. Such a particularized study of a geographical type not only brings out a closely related body of representative geographical ideas, causally bound together, but it plunges us deep among the roots of the other sciences upon which geography rests, *e.g.* geologic strata and changes, the physics of air-pressure, vegetation, and animal life in mountain districts; the chemistry of mineral waters, railroad-engineering in mountain canyons; winds, snows, and meteorology, erosion by ice and water. In the midst of such a region nature also shows herself beautiful and refreshing, or grand and rugged for the culture of the æsthetic and religious sense. What does the usual study of geography give us to treasure up from such a region? Ought not a detailed and instructive description of such a type,

aided by pictures, give us a score of attractive views into the very workshop of nature? From the rock-strewn summit of Pikes Peak to the health-giving springs that gush from its roots at Manitou, this whole region is bathed in science as in sunlight. Yet our purpose is not to teach natural science, but geography, as causally based upon natural science.

True insight into any topic, and appreciation of its value, are based chiefly upon the causal chains which link it to other kinds of knowledge.

5. After the full description of a topic, such, for example, as a coal mine in Pennsylvania, and the study of its important relation to railroads, factories, etc., it is compared with other coal mines along the Alleghanies, in Illinois, and other parts of the United States; the great coal fields are located on the map, and a few of the chief shipping-points for coal, as New York, Philadelphia, Pittsburg, Cleveland, Chicago, and St. Louis, are located. We may even compare later the whole coal production of the United States with that of England and Germany and get some grasp of its vast importance to the whole country and the world. In this manner a type study expands gradually to embrace a large collection of geographical facts. But they are all well arranged around a single centre of thought. This is a marked improvement over the old plan in geographies of learning the scattered facts about coal and coal production in connection with a dozen or more different states at differen-

times, months apart, and never attempting to bring them together as one connected body of facts. The practice of heaping up a miscellaneous quantity of facts in connection with California or Connecticut is essentially bad because there is no real centre of thought, no unity or connection between the facts. So far as a state has a political unity it should be often used to designate a district of country and to some extent a physical and climatic character, but the great commercial and physiographic units of study pay very little heed to state boundaries.

This movement from home outward on the stepping-stones of great typical subjects is in strong contrast to the custom of memorizing mere facts more or less fragmentary and disconnected. The chief merits of the type studies are, first, that they deal in full measure with concrete and interesting details, and, second, that they lead to strong, clear geographical concepts. The fact-cramming process is neither instructive by means of concrete pictures nor rich in significant concepts. It is essentially empty and barren. Like a dead tree stretching its naked and desolate arms toward the sky, such an instruction has neither leaves nor fruit to clothe it with beauty nor a life-giving sap to attest its vitality.

6. To what extent does the series of types, which we have outlined, cover the whole field of geographical studies for these grades? Only a few topics are fully treated, and many important facts may appear

to be neglected. How far will the product of such a year's study be complete and systematic rather than fragmentary and disconnected? It is not claimed that the treatment of single types will give fulness and completeness to all these studies but only that the series of types furnishes a safe central line of operations. To supplement and complete the work with types we shall need map studies and map drawings, comprehensive surveys, reviews, and drills, and abundant use of text-books and wall maps. The formation of important and significant series of geographical objects will bind together the larger units as well as the smaller. For example, the great commercial routes of the Mississippi Valley from east to west, and from north to south, the climatic zones, the large river valleys and mountain-chains will bind together the separate facts into larger series and complexes.

But the type studies themselves, if followed out, will lead to an organic building up of large geographical groups and sequences. The study of Pikes Peak and the neighboring mountain cluster, when compared with Gray's, Frémont's, and the Spanish peaks, leads on to a knowledge of the main ridge of the Rocky Mountains of which they are striking parts. The study of Lake Superior leads to an understanding of the series of great lakes and of this important line of water traffic between the East and West. The description of the hardwood forests of Indiana is incomplete till the whole extensive Ohio Valley, with the



tributary streams, is drawn in. The very idea of a type study involves the necessity of reaching out so as to embrace a large number of kindred objects into one connected series or group. If we have succeeded in selecting the important types of the Mississippi Valley, a proper comparison and extension of these types will draw in most of the cities, rivers, lakes, mountains, etc., that deserve a child's attention. If any are left out, it is because they are not important or characteristic enough to demand notice. We are disposed to omit all geographical names which have nothing in particular to recommend them, nothing which they help to illustrate or explain. A great many geographical objects are of local importance, of which a child, for the present, can afford to remain entirely ignorant.

Our further plan is to follow in fifth and sixth grades a series of type studies through the Atlantic and Pacific States, British America, and Mexico, closing the work with a conclusive survey of North America as a whole. North America then becomes our type of a continent with which we may set out to measure more accurately the other continents of the world. Our general movement is toward ever larger and more complex wholes. It is, in the main, synthetic.

7. In following the series of type studies for North America we are not neglecting physical geography, though we get at it from a somewhat different

approach. Many of the great types are strongly physiographic, while the immediate bearings upon man's interests are included. Our purpose is to bring physiographic facts into such close relation to human needs as to make both of them tangible, realistic, and often picturesque. The pioneer history stories add greatly to the emphasis given to topography, climate, etc.

A whole continent does not seem to us a suitable subject for detailed treatment in fourth grade. In spite of sand-building and modelling it remains largely a formal and barren subject. Short surveys of the whole world and a somewhat fuller treatment of North America may well preface the series of typical studies we have outlined. But they should be brief and preliminary, merely a bird's-eye view. By a constant use of wall maps of the United States and of North America, by means of the broader comparisons and surveys which close up the treatment of every typical subject, we are steadily marching toward a clear and definite understanding of the great physical features of the Mississippi Valley and of North America. The characteristic regions of production are brought out with great distinctness, and when we finally reach the point where the Mississippi Valley as a whole can be surveyed, how rich and varied do its resources appear! What variety of surface, landscape, and climate! How closely connected by water and rail! The whole Mississippi Valley finally becomes the type of a mighty

river basin, with which the largest and most fruitful river basins of the world may be later compared.

Finally, we may say a word of the effect of this more deliberate and thoroughgoing study of North America upon the work with Europe and the other continents in seventh and eighth grades. To approach Europe and Asia with a rich and in part well-organized fund of knowledge of our own country is altogether desirable. We shall not find many things in Europe that are wholly new to us, and a quick intelligent eye will speedily discern how much like America Europe is. Their food and clothes, their governments and cities, their mountains and rivers, their languages and churches, their homes and schools are very much like ours. In some respects they are better off, in others worse. To keep the minds of children alert and active in comparing these and other things on the two sides of the Atlantic opens one of the most hopeful opportunities for doing thoughtful, rational work.

#### EXAMPLE OF THE TREATMENT OF A TYPE

##### NIAGARA FALLS AND THE COMMERCE OF THE GREAT LAKES

Niagara Falls lie midway between Lake Ontario and Lake Erie. Lake Erie is nearly 300 feet higher above the sea-level than Lake Ontario. About six miles south of Lake Ontario the level plateau in whose basin Lake Erie lies drops down 300 feet to the plain which borders Lake Ontario. The Niagara

River, in making its way from Lake Erie to Lake Ontario, must leap over this bluff or escarpment. At the present time the falls are about six miles back from the edge of the escarpment. A stratum of limestone rocks 140 feet thick extends from the edge of this escarpment southward and, dipping gradually, passes under Lake Erie. The Niagara River, as it flows northward, drops over this ledge of limestone rocks at the present site of the falls. It is 160 feet from the edge of the cataract to the level of the river below. The remainder of the 300 feet of descent is made by the rapids above and below the falls and by the descent of the river. The falls on the American side are small and, in fact, constitute a part of the east bank of the river. The great Horseshoe Falls, which lie to the west of Goat Island, constitute the main part of the falls. Here the enormous body of water tumbles into a great chasm from three sides, and it is here that the main action of the water in grinding out the rocks takes place. Above the falls is a great series of limestone ledges, over which the broad river plunges, forming a wilderness of waters, as seen from the Three Sisters Islands, very grand and impressive. In fact, the view up the river from the Three Sisters is one of the grandest scenes in nature. The Horseshoe Falls can be best appreciated from the *Maid of the Mist* as it sails up under the waters from below.

Below the falls is the deep, narrow gorge, with its precipitous walls nearly 300 feet high,

through the narrow bottom of which gushes the swift river. How was this gorge formed? It extends about six miles to the edge of the escarpment. As the water tumbles over the edge of the falls, it descends into the river 200 feet deep. The underlying rocks beneath the limestone ledge, already described, are soft shales and sandstone. The rushing waters at the foot of the falls gradually wash out great caves in the softer rock, and the superincumbent mass of projecting limestone breaks off in great chunks and tumbles into the bottom of the river. In the centre of the Horseshoe Falls, where the water from three sides plunges into the deep caldron, the action of the water is so powerful as to grind up these loose rocks at the bottom and sweep the sand down the river. On the edges of the gorge, where the action of the water is less powerful, the broken rocks are not ground up, and form a sloping side or talus which is found on both sides of the gorge throughout its course. In this way it has been found by close measurements that the falls are yearly receding toward the south, in the middle of the Horseshoe Falls, at the rate of from four to six feet a year. During the present century, the measurements have been quite accurate, so that the rate of recession is somewhat definitely known. With this as a basis efforts have been made to reckon the number of years necessary for the formation of the gorge, but the estimates have varied from 6,000 to 30,000 years. The gorge between the

falls and the escarpment is a most interesting scenic object. An electric railway descends along the eastern edge of the gorge and, passing close by the whirlpool rapids, proceeds along the foot of the cliffs till it reaches Lewiston at the outlet of the gorge. Here the Niagara River widens into a lordly stream, deep and broad, as it courses toward Lake Ontario. Another electric railway climbs the escarpment on the Canadian side, and on its return to the falls gives excellent views of the river and gorge from above.

If heavily laden grain ships start from Chicago or Duluth, how far can they proceed down the Lakes before stopping to unload? If it were not for Niagara Falls, they would not stop at Buffalo, but pass on to Lake Ontario, and perhaps down the St. Lawrence on their way to Europe or New York. As a matter of fact, all the Great Lake vessels, moving eastward, are compelled to unload their cargoes at Buffalo. If it were not for Niagara Falls, would there be any need of an Erie Canal? or a Welland Canal? Would there be any great city at Buffalo? If large vessels could pass freely from Lake Erie to Lake Ontario, what part of the Erie Canal would still be serviceable? There is at present a branch of the canal from Oswego to the main canal and Albany. In this case, what sort of a city would Oswego be? Perhaps the main body of commerce would go down the St. Lawrence, but there are difficulties in the navigation of the St. Lawrence, such as the rapids, which have

made canals necessary, the short season of navigation at the mouth of the St. Lawrence, so far to the north, and the fact that all of this commerce must pass through a foreign country. The probability is, therefore, that the canal, in any case, would extend from Oswego to Albany.

So far as commerce is concerned, Niagara Falls are an enormous obstruction, making necessary the expenditure of many millions of dollars on canals and railways. Moreover, the traffic route from Chicago, Duluth, and the Lake cities is by many times the most important traffic route in America, and Niagara lies at its centre, obstructing all free commercial intercourse. The vast importance of this trade route may be seen in the quantity of great staple products like corn, wheat, and packed meats which are shipped from Chicago and the other Lake cities to Buffalo, New York, and Europe. The greatest railroad trunk lines follow this route, such as the Michigan Central, the New York Central, the Nickel Plate, and others.

On the other hand, do the great falls perform any service to man to compensate for this inconvenience and difficulty? There is immense water-power from the falls, and a group of mills on the east side for many years has used a very small fraction of the water for moving mill-wheels. But within the last few years engineers have constructed great water-wheels near the falls for producing water-power and for converting this power into electrical force. It is

being utilized by mills and factories and street-car lines within a radius of twenty miles from the falls. So great is the amount of power which can be generated at the falls and put to use in factories and shops that it is expected that the country about Niagara Falls will become, in time, the greatest manufacturing centre in the world. Another reason for these hopes is the fact that raw products of many kinds can be shipped to this point at little expense.

In the early history of explorations we find that Hennepin and La Salle, in trying to navigate the upper lakes, met their greatest difficulties at Niagara Falls. It was necessary to carry a heavy forge and tools over the bluff and along the river to a point six or seven miles above the falls, where, in the rigors of a severe winter, forest trees were cut down and a vessel was built for the navigation of the upper lakes. It was called the *Griffin* and was used by La Salle and his party in their first trip to Mackinaw and Green Bay. The Columbus caravels, which were objects of such interest at the Columbian Exposition, were taken up the St. Lawrence River and through the Welland Canal, reaching Chicago by way of the Lakes. Some of the smaller whaleback steamers have made the trip from Duluth through the locks at St. Marys Canal, the Lakes, and the Welland Canal, down the St. Lawrence to Liverpool.

Geologists have been anxious to determine the number of centuries since the Niagara River began to



cut its gorge. In this way they would be able to determine the length of time since the glacial period or the ice age in North America. The great glacial sheet gliding down from the north at one time filled Lake Ontario so that the Niagara River could find no outlet into Lake Ontario. At that time the upper lakes must have found an outlet in some other direction. The old channel by which Lake Michigan sent its waters into the Illinois and Mississippi has been found. As the ice receded toward the north, and the waters from Lake Erie were first sent via Niagara over the escarpment toward Lake Ontario, the outlet of the St. Lawrence was still obstructed by ice. In those days the outlet to Lake Ontario was by way of the Mohawk and Hudson, and the old channel has been found. If this were still true, it would remove some of the difficulties of our navigation.

If we compare the falls of Niagara, its gorge and rapids, with the falls of St. Anthony at Minneapolis, we shall find that a similar gorge extends from Minneapolis down the Mississippi about five miles to its junction with the Minnesota. But this gorge is only about one-third as deep, though about the same width as the Niagara gorge. An examination of the rock strata at St. Anthony's Falls will reveal also a similar series of rocks, hard limestone above and softer rock beneath, and a similar recession of the falls. At Minneapolis, however, great flour-mills worth millions

of dollars have been established at the western edge of the falls, and the recession of the falls would render them useless. To prevent this a heavy framework of wooden chutes has been built and heavily buttressed, so as to completely cover the rocks at the falls and prevent them from wearing away, thus making the falls stationary. But the old scenic beauty has been destroyed. At Rochester, New York, where the Genesee River plunges over the escarpment toward Lake Ontario, a series of falls and gorges is found which is explained in the same manner as Niagara Falls. It will be of interest to compare other falls in North America, like those of the upper Missouri, Yellowstone Falls in the park, and the falls of the Columbia, with those of Niagara, to see if similar causes are operative. Later, in the study of Europe, Africa, and other lands, we may compare the falls of the Rhine, of the Nile, the Zambezi, and the Congo with those of Niagara, in their effect upon navigation and traffic.

## CHAPTER V

### EUROPE — SEVENTH GRADE

THE third great centre of geographical study is Europe. In thus selecting the smallest of the great continents as the centre of the world's geography, we are granting a large influence to the historical or human side of geography. Europe is undoubtedly the centre from which all exploration and conquest of the world, in the last four hundred years and more, have gone out. From Europe have sprung the hardy and intelligent races that have had the energy to explore and master the world. Since we are studying the earth as related to man, we can hardly escape from this powerful historical drift.

After completing the previous studies of North America, there lies before us the choice of a movement to South America and the Southern Hemisphere, or to the East and to Europe. We are bound to Europe by historical and commercial relations and, also, by bonds of language and kindred which are more important than the structural resemblance between North and South America. Not only is Europe nearer to us and easier to reach, but the historical and literary associations between North

America and Europe are already familiar to the children in many of the best myths and stories of childhood, in the heroic tales of early European history, and in the voyages of the early explorers, such as Columbus, Magellan, Raleigh, Drake, and others. The children are familiar with many stories of English history, of Greece, of Italy, and of the Bible lands, and even with the maps of those countries. Our population has come to America mainly from Europe, and many of the people trace their kindred back among the different peoples of Europe. The great trade routes over which our surplus products are sent to foreign lands have already been traced to Europe in discussing topics of our own geography. The climatic conditions, productions, industries, commerce, seaports, and inland seas of Europe furnish topics more resembling those of America than of any other country, and they may well be compared with similar topics already studied in America. In many ways the study of Europe is simply an enlargement of our American geography. Our work in the seventh grade, therefore, will consist of a carefully selected series of topics on the geography of Europe.

It might appear at first glance that so small a continent as Europe would hardly require our study for a whole year, but a closer scrutiny will bring to light a surprising number of most interesting and instructive topics—more than enough to occupy our full time.

In striking contrast to the United States, Europe is split up into a large number of distinct and isolated nationalities, based upon equally distinct physical divisions. In Europe there are fifteen different nationalities speaking as many different languages and separated from each other in most cases by mountains or seas.

While in North America there is a single powerful nation, in Europe there are five great powers and as many more, each, of second and third rate powers. All these things considered (the variety of physical structure and of national life) give the geography of Europe a very large number of strong, distinctive topics. When we consider that these are the foremost nations of the world, and have attained in various ways the highest arts of living, have carried mining, agriculture, manufacturing, commerce, and the fine arts to a higher degree of perfection than elsewhere in the world, the lessons of European geography will prove of highest value. The applications of science to life in intensive agriculture, in the making of fine pottery, silks, and textile fabrics, the museums and superior art products, the splendid architecture in churches and public buildings, the ruins of ancient cities, castles, and roads, the far-famed scenery of mountains, lakes, and rivers, the aristocratic forms of government and society, are all worthy of careful study.

The history of Europe during the last two thou-

sand years and more is of far greater value to us than that of any other continent except our own, and is, in fact, a part of our own earlier life. Our ancestors, in contact with the physical surroundings of Europe, left there a record of many memorable events, and these historical associations greatly intensify the interest in geography.

The peculiar national character and customs of each of the great nationalities of Europe suggests a remarkably instructive series of great lessons. The Germans, for example, have a number of very interesting traits: they love outdoor life and excursions, the whole family often spending an afternoon upon long walks to the riverside or to parks, and among pleasant gardens and scenes in nature, climbing the hillsides or roaming the forests; the school classes are also much regaled with such outdoor trips. The numerous, and often beautiful, beer-gardens are, in fact, delightful parks and sylvan retreats where bands of music discourse fine selections to thousands of appreciative people. The turner societies also express the physical strength of the people in the vigorous training which these physical exercises develop. The strong, warlike spirit of the people and the sharp military discipline of mind and body, the frequent sight of marching troops of stout, athletic youth in uniform, the splendid military dress and style of army officers parading the streets, the great

military garrisons and fortresses of the land, the yearly manœuvres of tens of thousands of troops in the open fields and camps, supply one of the great panoramic views of German life.

On a par with this physical sturdiness is the mental energy of the people, the love of learning among the higher classes, and the universal intelligence among the common folk. Their common schools require the thorough, sensible education of every child, and the higher schools and universities have trained the most progressive scholars and scientists of the world, in almost every department of learning. The love of fine music is also a very marked trait of this strong people. Some of their cities, as Leipzig and Berlin, are the centres of the musical culture of the world, and many of the most cultivated musicians of our own country go to music-loving Germany to complete their training in the conservatories and at the fine concert halls and opera houses of Germany.

Again, the pleasing family life and customs, the Christmas and Easter festivities, the oft-recurring birthday parties and gift-making associated with them, the loving care of the aged, the simple, frugal style of living among the common people, the generally earnest, loving, and sympathetic quality of family life, are worthy of being described in a plain and Dickens-like manner which our school children can thoroughly appreciate. Our geographical readers are not lacking in many of the elements which

make up this picture, or series of pictures; even the peculiar costume, houses, kitchens, gardens, and villages of the common folk are portrayed, and those singularities which bring out the striking lineaments in the portrait of a people may be observed and made plainly evident.

It is plain that we have been but making an inventory of those national qualities of the Germans which are already somewhat familiar to us in Milwaukee, Cincinnati, and other German centres of our own land. In this connection, what better thing can we do than remember that we are well supplied with German folk at home, that they make a good share of the strength of our own nation? We may consult the map of the United States and locate the chief centres of German population, and examine the emigration tables of the last fifty years, to say nothing of the days of William Penn and the Pennsylvania Dutch, to see how many people the fatherland has been sending to find homes in America.

This kind of study will give us a more intelligent sympathy with the German-American elements of our own population.

There are other European peoples equally worthy of this descriptive treatment and study, as the French, the Irish, the Italians, the Scandinavians, the Russians, to say nothing of the Dutch, Scotch, and English. If we can get deep enough into the meaning



and quality of these national types, we shall give a touch of true cosmopolitanism to the studies of school children.

As partly indicated above, the study of European topics furnishes a remarkably good opportunity for a comparative review of similar American subjects previously studied. There are strong reasons for making such comparisons systematic and regular.

1. Many American topics previously studied in America are surprisingly similar to those of Europe. Especially is this true in the treatment of rivers, mountains, cities, commercial routes, and the chief manufactures. A comparison of Hamburg and New York in point of harbor, commerce, river, canal, and ocean connections, population, etc., is the means of making the facts about each stand out with singular distinctness.

2. The previous full study of similar topics in the United States makes it possible to give a quick and complete interpretation to those of Europe. If children have enjoyed a full description of the difficulties and expense of making the Hoosac Tunnel, they will very quickly grasp the still greater difficulties of the St. Gothard Tunnel through the Alps and the advantages of the same. A swift and accurate interpretation of new topics is one of the greatest achievements of later geographic work. If the pupils have studied in descriptive detail the building of wooden and iron ships at Bath, Maine, they will steam up the Clyde River at Glasgow and give a

quick and true interpretation to the greatest ship-building mart of the world.

3. To place the leading topics of Europe and America side by side and measure them one upon another is to reveal a large number of very instructive resemblances and contrasts. Such a comparison goes much deeper than the formal statement; for example, that the United States now produces more tons of pig-iron than England. Such lump statements are common in the geographies, but do not greatly enlighten a child. The detailed treatment of a few type studies in the United States has supplied the children with a body of specific items of information on leading topics that makes a fuller comparison on those points very interesting and richly suggestive.

A comparison, for example, of Berlin with Chicago (two cities of nearly equal size) will reveal the surprising fact that in the last fifty years Berlin has been growing nearly if not quite as fast as Chicago. We already know the big commercial advantages that have caused Chicago to grow like a mushroom. But Berlin has almost none of these advantages. Situated on a barren, sandy plain, with no natural facilities for water-transportation, she has leaped into the race with Chicago and has kept up an even pace with her. What can be the explanation of this? Berlin has clean streets and a careful, thrifty, economic management of city affairs. Chicago—!

4. Such comparisons furnish a singularly interesting review of American topics. One of the standard illustrations of dulness and ennui in studies is review lessons in geography. It takes no great gift of imagination to picture the yawning, sleepy schoolboy as he sprawls over these delectable tasks. If there were a necessity for this sort of machine effort in the economy of life, we would not quarrel with destiny, but we are disposed, as Lowell says, "not to go about to make life duller than it is."

It is quite easy to see that a small degree of ingenuity on the teacher's part, instituting specific comparisons between American and European topics of like physiognomy, is able to set the whole mental machinery into throbbing action. Such a comparison stirs up a whole nest of thought-producing problems and makes lessons to bristle with sensible questions.

In discussing the coal production of England, we notice that England is much smaller in size, population, and area of coal fields than the United States, and yet, until recently, the coal production of England was greater than ours. Explain this. Many of the greatest cities of Europe, as Berlin, Paris, Moscow, Rome, and Madrid, have but little natural advantage for water traffic. In the United States not a single large city but has first-class water facilities. Why this contrast? A more elaborate illustration of the comparison of a topic of Europe with that of the

United States (the Rhine and the Hudson) is given at the close of Chapter X.

This question may well be asked, whether the method of comparative review is not potential enough to take the place, mainly, of the usual forms of review. We believe that this system of comparative survey is quite sufficient to keep up a vivid and constant review of earlier geographic studies, so as to allow the children each year an entrance to new and interesting fields of study, and to put an end to the dull reiteration and rehashing of old subjects of study.

5. Another effect of these comparisons is an organization and consolidation of geographical information around a few great centres of thought. This grouping and classifying of facts is what gives, in the end, simplicity to the varieties of knowledge. It ends in the grasp of a few leading principles, and we have the surprising result that the more facts we accumulate and the wider the range and variety of our information, the more simple and transparent to the mental eye it becomes; of course, this means that we are getting at the science of the subject.

If we were to study Europe without reference to America, we might easily arrive at the conclusion that they are two strikingly distinct and incongruous geographical subjects, with very little fundamental agreement, but this is very far from the truth, even so far as the capacity of school children is concerned.

6. It is quite possible by these comparative reviews to produce in the children an unwonted degree of thoughtfulness and self-activity. Children of the seventh grade are competent for this sort of effort if they possess the accumulated resources of knowledge to form the basis of comparisons. For this we have, however, abundantly provided in the fruitful type studies of fourth, fifth, and sixth grades and by the further treatment of a few similar topics in Europe.

The independent thought-process depends upon the setting up of problems for solution. In the "Special Method in History" this problem-solving work was elaborately discussed and illustrated. But it is quite as well adapted to the work in geography. The problem in the form of an equation, involving one or two unknown quantities, is the normal way of stating a geography topic in this grade. At least, this is the case after the main descriptive facts of the new lesson have been presented. After getting at the physiography of the Danube Valley, its cities, commerce, bordering states, difficulties of navigation, and relation to the Black Sea and Rhine, we may set the children to comparing the Danube with the Ohio to see which of the two is the more important navigable river. They may examine the maps and descriptions of those valleys, the productiveness of the regions through which they flow, the size and character of their cities, the importance of tributary streams, the significance of the Danube as a route connecting

still larger traffic routes than itself, the mountain barriers from which they rise, and the character and number of the people. There is scarcely an important topic of European geography that will not receive a flood of light by such a comparison with some suitable, similar topic in North America.

In such comparisons the strong contrasts are a great source of interest and clearness of thought. The diminutive size of important European countries as compared with our states is often surprising. England is half as large as Colorado, and has fifty times as many people. France is about one-third larger than California. The Hudson River is one-third as long as the Rhine, and drains scarcely more than one-sixth as large an area, and yet, for purposes of shipping, the Hudson is deeper and broader than the Rhine. The great traffic routes of the United States by rail run east and west across mountains and plains, almost disregarding the physical structure of the lands. The great traffic routes of Europe adapt themselves in the complicated physical structure. The internal waterways of America are naturally of surprising value and extent, but by means of artificial canals and slack-water navigation the rivers of France and Germany give a wonderfully cheap transportation of heavy staples.

Quite a number of topics of European geography dealing with the crude products of agriculture, mining, and manufacture will require but brief treatment

in Europe. Lumbering, iron-mining, grain production, cattle-raising, wool-growing, and other raw production have been described in such complete pictures in the United States that it would be a waste of time to describe them again with equal fulness in Europe. A quick bird's-eye view of each of these great industries will lead at once to significant comparisons with similar things at home.

In this way, also, we shall gain time for a full description of the famous and more venerable objects of this old civilization: St. Paul's and St. Peter's in London and in Rome, the famous palaces and art galleries of Paris, the lakes of Scotland, old Edinburgh, the Acropolis and the Alhambra, the Gothic churches of the Rhine, the Kremlin and the houses of Parliament, the picture gallery at Dresden, and the ruins of Rome and Pompeii. Not so much words as pictures and scenes, drawings and graphic portrayals of these most characteristic and remarkable objects of Europe, are necessary.

For five or six years, in a proper school course, the children have been collecting history story, legend, poem, and biography of the great scenes and persons of European history. The geography lessons should take advantage of the intense interest thus awakened in European geography and bring the brilliant sidelights of history to bear upon these European topics. No country affords such an opportunity for this as Europe. The Prince Albert Monument in Hyde

Park, London, the Castle of Heidelberg, the shrines of Westminster Abbey, Abbotsford, Windsor Castle, the monument to Germania opposite Bingen on the Rhine, Napoleon's Arch of Triumph in Paris, the Tell Chapel on Lake Lucerne, and the Columbus Monument at Genoa are but examples.



## CHAPTER VI

### EIGHTH-GRADE GEOGRAPHY

THOSE parts of the world outside of Europe and North America supply the topics for our geography in the eighth grade: Asia, Africa, the Indies, and South America, with the remaining seas and oceans. This furnishes a wide variety of large topics not easily organized into a simple plan. It contains the widest diversity of surface, climates, populations, and stages of culture from barbarism upward. How to organize this extraordinary variety into an instructive and coherent plan of studies is our problem.

Observe, first, that long before reaching the eighth grade, according to our plan of study, the children have become somewhat familiar with these countries. In the home geography, in third and fourth grades, they have visited China and Japan, South America and Africa. In their survey of the world-whole, they learned to know and name the large land masses and oceans. In intermediate grades they crossed the oceans with Columbus and Magellan, and coasted the shores of the chief islands and continents. Many of the geographical topics previously studied,

as the old trade routes to India, the Portuguese explorations along the coasts of Africa, the colonial possessions of Spain and Portugal, and the chief topics of mathematical geography in the sixth grade have given definite knowledge on a number of large topics.

But we are now to sift out a few of the more prominent and instructive topics of this broad and varied field for such enlarged treatment as will conduce to real intelligence and a better classified information. In this as in other fields of geographical study, we believe in taking full possession of a few commanding positions, getting the mastery of a few most significant topics.

If a teacher were strongly possessed with the idea of learning the names and locations of places, provinces, productions, etc., these regions offer a very paradise of curiosities and freaks. But great as are the attractions of this babel of foreign languages of the uncivilized and semicivilized races, we must resist the temptation, and try to get possession of some clew which will lead us through this many-chambered labyrinth of knowledge.

We must determine, therefore, beforehand, the principles upon which we propose to make the selection of a few leading topics.

1. Starting with Europe as the source of all modern exploration, migration, and conquest, we may study and interpret large portions of Asia, Africa, and other outlying portions of the world, from the

standpoint of the European nations which possessed themselves of these lands, and in many cases still govern them. This point of view also opens up the great traffic routes by land and sea, by which the products of these countries are interchanged with those of Europe and North America. We can hardly get a better introduction to the people of India than through an account of the British occupation and present administration of Indian affairs. Likewise, the story of the Dutch conquest of Java, and their management of its people and resources, will give us some true notion of the value of this "Pearl of the East" and of the neighboring islands under Dutch sway. The best parts of Africa and South America, the whole of Australia and New Zealand, admit of the best approach and interpretation in the same way.

Some may object to this effort to project European ideas and standards upon the other native races of the world, but the very contrasts which are brought to light by the presence of these European standards are what enable us to understand them better. There is not the slightest doubt that the world is being Europeanized or Americanized as fast as circumstances permit, and the movement is a rapid one. From the standpoint of commerce, of all forms of industrial life and government, European standards must remain the basis of judgment. Even the nominally independent empires of China and Japan

are now completely in the whirl of European politics and at the mercy of commercial influences which centre in London, Paris, Hamburg, and New York.

2. It is not possible to treat any of these proposed topics without constant reference to important physiographic facts and principles. On the whole, it is better to meet these physiographic facts in immediate relation to men's necessities than to study them systematically in a separate category. And yet, before completing the work of this year a number of topics of pronounced physiographic character should be completely traversed. For example, the great deserts through Asia and Africa should be described and explained in their relation to mountain ranges, oceans, and ocean winds. The physical structure of the great mountain masses of Asia should be examined in their relation to India and to the rivers and plains of the South, and to the deserts and vast plains to the north. The same should be done with the relief of Africa, South America, and Australia, and the points of resemblance and contrast in the great continental masses noted. The equatorial regions of the Amazon, the Congo, and the East Indies should be studied and compared with one another, and the causes of the marked climatic conditions understood. The relation of these physical facts to man, to the density and distribution of population, to the vigor and intelligence of the

people, to commerce and production, forms a necessary part of the treatment.

In the latter part of the eighth grade, a strong emphasis should be given to those broad concepts of physiography, for which the illustrative material has been collecting all through the grades. For example, a study of the equatorial and counter currents in the Pacific Ocean, a comparison of them with those of the Atlantic and Indian oceans, and the effect of these upon the climate, the homes and activities of men upon the surrounding continents and oceans would organize a great body of geographical facts.

It is toward the close of the common school course, when the children's power of thought has grown stronger, and when the data upon which conclusions can be based have been collected, that these larger generalizations should be worked out. The mature and well-furnished mind of the teacher, seeing the powerful influence of these great physiographic laws, is inclined to preface the elementary geographic instruction with them. But younger children are not ready for physiography in its scientific form. The tendency to force a scientific point of view prematurely upon the minds of children is well illustrated by the place assigned in the grades to mathematical geography. A few years ago it was taught chiefly in the fourth grade or even earlier, at the very entrance to geographical studies, but now we are postponing it as far as possible, even to the sixth grade.

If we will but read one of the standard physical geographies for high schools and consider how little of it can be put within the reasonable comprehension of children in the intermediate, and even in grammar grades, we will be warned against haste in pushing scientific generalizations.

3. Topics having a strong resemblance to those previously studied in Europe or North America will require but a brief treatment, and a short comparison should be made. For example, gold and silver mining in Australia, Africa, and South America require no extended description, as similar topics have been fully described elsewhere. But the comparison of results on a large scale is instructive. Cotton and wheat production in India, the silk industry in China, the agriculture of Australia and New Zealand, cattle-raising in South America, and the government of smaller colonies require no full description.

On the other hand, the pronounced and characteristic topics in Asia and the Southern continents deserve an elaborate presentation and study. Such subjects as tea culture in China and Japan, the government of India, the Island of Java under Dutch rule, the Nile River, the Congo and the Amazon, the character of the Chinese people, the desert of Sahara, coffee plantations in Brazil, the progressive quality of the Japanese people, Russia's Siberian railway and relation to China, England, etc., the

Himalaya and Andes mountains,—these are deserving of full consideration.

We will add a few suggestions in regard to the mode of teaching and studying topics in the eighth grade.

The plan of review by comparison should still remain in full force. The rivers, mountains, cities, products, and people of these Oriental and Southern lands should be systematically compared with those of North America and Europe, already familiar to us. To learn that Java is not as large as Illinois, and has twenty-five millions of people, will help us to understand how productive and well tilled that island must be. The comparison of Japan and New Zealand with the British Isles in size, population, and importance is very instructive.

On account of the marked climatic differences between the Northern Hemisphere and the equatorial lands, the most striking contrasts are brought out by comparison. If the whole Mississippi Valley be compared with the basin of the Amazon, the wide difference between temperate and torrid plains is displayed: one an impenetrable forest, wild and largely uninhabited, the other cultivated and everywhere habitable, with scores of cities and a thrifty, intelligent people; the one region flooded with tropical rains, the other partly arid and treeless. They have, also, some interesting points of resemblance. A comparison of the Congo with the Amazon shows, also, a striking contrast even in equatorial rivers.

The comparisons of Eastern with Western civilization reveal clearly the advantage of modern inventions and scientific progress. The contrast, for example, of the slow and burdensome boats and shipping, poled along on the Yangtse River in China, with our steamboats on the Rhine and Hudson, shows a difference of hundreds of years in progress. A study of the processes of agriculture and manufacture by hand in Eastern lands, shows how far they have lagged behind Western Europe and America in the arts of life. This whole year's work should throw into brilliant light the advantages of Western energy, intelligence, and scientific progress. Even the savage and barbarous races met in the East Indies and Australia, intensify this contrast. The difference between the homes and occupations of the Papuans of New Guinea and those of Germans and French in Europe may lead to fruitful reflection.

Throughout the seventh grade, the different races of the world are easily compared with one another, and the characteristic traits, the marks of excellence and weakness, are brought into prominence. In the seventh grade, a few of the strong nationalities of Europe were described. As these more intelligent and vigorous races have spread themselves over the world, subduing or displacing many of the weaker races, opening up trade routes and marts for traffic, filling nearly every nook and corner of the world



with something of the spirit of modern progress, distributing everywhere missionaries, merchants, and soldiers, we get some clear notion of the manner in which the whole earth is being brought under tribute to the needs of man.

Among other things, we locate the thickly populated districts of the world, and see the reasons for such concentration in a few spots, while other immense tracts of land are either uninhabitable deserts or impassable tropical jungles.

One of the greatest lessons of all is to discover how every part of the earth is now made to contribute to the needs and welfare of every other part, and to see with what expenditure of energy, capital, and ingenuity the aggressive races of Europe have built canals, opened ocean highways and continental railroad lines. The iced meats of Australia soon find their way to London, and refrigerator fruit cars cross the continent of North America in a few days. These topics lead us close to the present trade rivalry of the great powers for the commerce of the world, and to the question how the prices of staple products are fixed by the world market.

It is quite evident that the geography of the eighth grade brings us to the threshold of a number of great sciences, physiography, meteorology, anthropology, economics, and astronomy. It is not the province of geography to set up any one of these subjects as a distinct branch of science but to bring

together in an interesting and instructive way much of the concrete material of these sciences which, in the high school and colleges, will be expanded into distinct branches of study. Thus, standing at the end of the common school course in geography, as we survey the whole, a bright illumination is thrown upon the aim and scope of the study. The broad, simple comprehensiveness of geographical topics forbids us from specializing in physiography, geology, or any special science. Science, as such, *i.e.* systematic classification and order, is naturally a later product, not to be prematurely forced upon children.

In the geography studies of the eighth grade, children are quite able to master the lessons from the study of books. They should be thrown as much as possible upon their own resources in the study of texts, maps, and statistical tables. In the discussion of lessons in the class room, the teacher's skill is best shown by questions which test the thinking power of the children in tracing physiographic causes and in suggesting valuable comparisons with previous studies. Children are not much inclined to use their previous knowledge by comparison unless constantly prompted by a thoughtful teacher. Interesting problems should be placed before the class; for example, Which has the stronger grasp upon Asia, England or Russia, and what is likely to be the result of their rivalry? What will be the effect of the opening of the Isthmian Canal in Central

America? In the struggle for a firm footing in Africa, which is likely to succeed the better, France or England?

The free use of geographical readers, books of exploration and travel, and physical geographies is to be encouraged. The stories of Livingstone, Speke, and Stanley in Africa, Clive's conquests in India as told by Macaulay, the stories of the Dutch and Portuguese in the East Indies, and even the narratives of Marco Polo furnish the best of sidelights for children in these grades. The voyages of Captain Cook and the conquest of Peru by Pizarro will add a lively interest to certain regions. A number of the best commercial geographies will furnish a large amount of interesting data for explanation and comparison.

By the close of the eighth grade, there should be a few large surveys of the world-whole from different standpoints, as, for example, the great mountain systems of the world, the large oceans and their movements, the world's chief traffic routes, the main centres of population, climatic conditions as indicated by isothermal lines and rainfall, and the political and economic preponderance of the great nations.

## CHAPTER VII

### METHOD IN TEACHING GEOGRAPHY

IN geography, as in all studies, much depends upon the teacher's method of handling the subject. Even a well-selected series of topics with a first-class text-book, supported by geographical readers, maps, and pictures, will not insure valuable and instructive work. Geography is a very cornucopia of the riches of the earth, and the teacher should be an expert in the mode of displaying these riches. The first need, however, is abundant equipment in knowledge, which we presuppose. Familiarity with the leading physiographic forms and processes is essential and a knowledge of the history of various lands very helpful.

The purpose of geography teaching is to awaken the mental energies and to enlarge the mental resources of children through the skilful employment of their minds upon this rich material.

In the homegeography of the third and fourth grades it is obvious that the oral discussion of topics is the only feasible method. Even where text-books outline and treat these topics, the book-work is only suggestive. The local excursions must be worked over in the

easily comprehensible. Children of the fifth grade can read, but they cannot put the sharper interpretation into what they read. They must first learn to think geography concretely before they can interpret books intelligently. In this lies the whole significance of oral instruction in the early stages of any study.

The method of treating types in class-room instruction is discussed more fully in the book on "Method of the Recitation," but its particular application to the elementary geography will be in place in closing up our discussion of special method in this subject.

Our plan of work for third and fourth grades, as suggested in the foregoing pages, is essentially a method for oral instruction. This is necessarily so in the home geography of the third grade, and is equally involved in our type studies of the fourth and fifth grades. What method of instruction, for example, should be adopted in the fourth grade so that children may get a clear and adequate understanding of a coal mine, or of Lake Superior, or of the lower Mississippi? We are not in favor of putting a book in the hands of children at this age, although the maps, pictures, and printed matter in a good book may be helpful. The teacher is more important in such work than any textbook. Let him handle and present and discuss the subject with the children. This involves a good share of the art of teaching. It implies a mastery of the subject, an understanding of the children, and a practical acquaintance with the technique of instruction,

such as discipline, narrative power, graphic representation on blackboard, thoroughness, and drill. The effort to acquire skill in this kind of oral treatment and discussion of topics is well worthy the ambition of earnest teachers. It is not a thing of easy attainment, and yet, if successful, it gives uncommon zest and spirit to the teacher's work. We will attempt to indicate some of the imperatives which the teacher must lay upon himself if he seeks success along this line of effort. We may remark in passing that many teachers are inclined to look upon all definite requirements as limitations to their freedom and individuality. But thoughtful teachers are seeking for definite channels along which to work out their freedom and individuality. They are even willing to submit to laws if they lead to success and to a better regulated activity.

In connection with skill in oral teaching we submit the following points.

1. A complete mastery of the lesson is required of one who will teach well orally. No mere reading over the lesson will give a good preparation. It must be analyzed into its essentials and grasped in its relations. A verbal memory of the facts will not answer; and the more one comprehends the fundamental notions of his science and possesses great fertility in illustration, the better. Mere method will do a teacher no good unless he has a full knowledge of the principles and facts of the geography topic. Scholarly

fourth grades, which deals with these very common things of which people are commonly ignorant, turns up this soil which lies at the root of the educational tree. Our naturalists, novelists, and poets, by their loving absorption and joy in these common things, teach us where to look for the simple beginnings and deep sources of wisdom. But schoolmasters, by a curious fatality, turn to those artificial cisterns called text-books. Sometimes they are empty for lack of rain. The teacher's mind needs to gush up like a spring from the midst of mosses, stones, trees, birds, and flowers, or like a fountain in the midst of the busy activities of the street and the shop.

4. The ability to form clear-cut images of these various objects and processes is a peculiar trait of the teacher. What the teacher bodies forth in distinct outlines in his own mind, he can the better explain to the children. After reading a description of a coal mine — shaft, tunnels, chambers, and plan of ventilation — the teacher should ask himself, Can I close my eyes and picture to myself the whole mine in operation? Can I project the simple plan of the whole, as it were, at a glance, as if the earth walls were transparent? If I am unable to do this, I cannot present it to children. I may multiply words (darken counsel with speech), I may even tell many interesting facts, but the whole thing remains a blur, both to teacher and children, unless that one bright flash has illuminated the whole picture with intelligence.

In picturing to myself the history of a volcanic mountain, such as Mount Shasta, unless I can throw into a connected series the succession of explosions and lava flows by which the shingly sides of the mountain were built up, and later the ages of storm, snow, glacier, and gushing torrents by which it has been torn down, I can give no intelligible account of the whole to children.

After going through a shoe-factory and noticing a multitude of interesting details, unless I can sit down and bring into one connected series the various work of the different operatives and thus image at a glance the chief steps of the whole process of shoemaking from start to finish, I cannot make a successful excursion with children to such a factory.

Geography everywhere, in dealing with the works of nature and man, calls into play this powerful human faculty of imaging. There is scarcely an important lesson in geography where the teacher does not find himself fronted by such a problem, calling for the splendid constructive power of imagination. It is just barely possible that a student may get through the high school and college with a minimum use of this imaging power, if he chances to have a good verbal memory and fluency of speech, combined with indulgence on the part of instructors. But from a fund of knowledge thus acquired he can never teach school. His tools are too blunt.



5. It is in this connection that the use of the blackboard by the teacher for sketches and diagrams, crude picturing, etc., becomes a source of power. In all such cases the whole energy and skill of the teacher are expended in stimulating the imaging power of the children. The blackboard is the best means of simple and sharp delineation. In explaining the workings of a canal-lock, a few simple lines on the board can do more than a multitude of words to suggest the correct image. In showing the recession of the falls at Niagara and at Minneapolis, a half-minute's board-sketching is worth much more than a page of verbal description. In exhibiting the depth of sea beds and relative heights of mountains, board-sketching is a short cut to the point. In almost every topic sketching is required. In showing plans of irrigation, the sinking of shafts and running of tunnels in gold, iron, and coal mines; in explaining many processes in mills, factories, lumber-camps, and ship construction; in the ground-plans of great churches and public buildings; in showing the action of streams in forming river valleys, the position and effects of glaciers, the contour of land-forms, as plains, mountains, and plateaus, — the teacher's use of the blackboard is an indispensable means of economy and skill in instruction. The teacher who cannot use the blackboard freely for illustrative purposes is shorn of half his strength at the start.

Map-drawing and construction for children will be treated later.

6. Yet the chief means of getting geography topics before the children is that by oral description. Simplicity and clearness of language are needed and a lively, interesting manner. Teachers who are constantly with children soon learn to avoid words and phrases which they cannot understand. Showy phraseology, vague and high-sounding words, are no part of a teacher's outfit in skilful, oral instruction. A very plain and lucid style of speech, which any one can cultivate, is the chief requirement. Words and phrases that are striking and picturesque, common and homely figures of speech, and original apt turns of expression should be cultivated by the teacher with the greatest care. Choice language should be a distinguishing characteristic of a teacher, and at no point does it come better into play than in these oral lessons. Yet stiff or stilted language is out of place. Freedom, good-fellowship, and humor, a ready interchange of question and answer, and the full use of gesture and manner to give clearness to thought are most desirable.

Besides the usual intercourse of life the more careful study of the best story-tellers, novelists, poets, and scientific writers is the best direct means of acquiring this language power.

7. Each topic or type should be grasped as a whole. The type idea which the particular illustration exempli-

fies should stand out clearly in mind. This requirement is a preliminary and preparation for good teaching rather than a part of it. The type idea may not come out at all for a while in the instruction of the children, but it stands in the background of the teacher's mind all the while, and regulates his progress. This central idea or line of thought is the pivot upon which the whole discussion hinges. It gives the teacher a true perspective in the treatment of his subject, it tells how much or how little detail is needed in special topics, and how far it is safe to trace the relations to other subjects and into other studies. In short, the type idea gives the teacher a safe centre of operations.

Each topic or subordinate part of the larger whole should stand out clear and sharp. Its distinctness should not be blurred by its close relation to other topics. The whole series of related topics, constituting a larger whole, should be worked out beforehand by the teacher and afterwards with the children, so that they not only master the ideas but fall into logical habits of thinking and learning.

We deem it well for both teacher and taught to preserve a neat copy of this outline of topics from day to day through the year. It is a standing proof of systematic and careful progress and a good basis for reviews. It will be serviceable in language compositions, and the outlines of other oral recitations in literature or history, in natural science and in language, may be neatly preserved in the same book.

This clear and definite outline of essential points may be placed on the board step by step in the progress of the recitation. To achieve this result is difficult, but is worth all the effort that may be expended upon it.

Fortunately, many of the large type studies chosen from North America and Europe contain within themselves a very strong and necessary natural sequence. Lumbering on the upper Mississippi should begin with the pineries and logging-camps and proceed to skidding, floating the rafts down the river, the saw-mills, and distribution of lumber by rail to the prairie regions. This is also the actual order in which the work is conducted. The description of an irrigating ditch in the West involves the following necessary order: the building of the dam, the construction of the ditch, the reservoirs, the letting of water upon the fields, the crops raised by irrigation, dangers of floods, water rights, and the settlement of disputes, the market for farm and garden products raised by irrigation. Many other illustrations might be given from physiographic, agricultural, commercial, and manufacturing topics, showing this strong, natural sequence in the leading divisions of a subject.

8. This brings us to the important question of tracing cause and effect and the solution of problems in geography which was treated at considerable length in the chapter on Method in the "Special Method in History." A powerful, causal sequence runs through

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many geographical topics, and it is a source of the strongest interest and intellectual effort to trace out this connection of cause and effect through the whole series of steps in a large lesson. In the sugar-beet industry, for example, we have a series of steps involving the raising of beets on the farm (agriculture), the processes of extracting the juices, slicing, steaming, diffusion, evaporation, crystallization, the complex process of refining (manufacture), the shipment and sale of the product and its final uses (commerce), which involves the adapting of means to ends at every step.

In approaching almost every stage in this causal sequence we can halt the class and call upon them to solve the difficulty which is presented at this juncture. How can the juice be extracted from the beets, which is to be boiled down later? In raising sugar-beets how may beets be secured which will produce the largest percentage of sugar? Is sugar obtained from sugar-cane by the same process as from beets? Even when the problem or question can only be partly answered it suggests a keen inquiry into the causes and reasons. There are scores and scores of places in good geography lessons where children should be allowed a moment, or if need be an hour or a day, to work out the solution of a problem. One peculiar advantage of this problem-setting is that pupils are brought face to face with precisely the same problems which confront the scientist, the agriculturist, the manufacturer, the merchant. They are dealing with the realities of life

in the same form in which they appear to people outside of school.

It is quite plain that to solve problems in geography is to make it to that extent an oral study. It is doubtful if text-books in geography can ever make much headway in offering problems for solution (although the questions at the end of chapters can do something in this direction). Their chief function is to state the facts and conclusions or answers to problems.

The teacher, in the midst of the oral presentation and discussion of topics, can frequently bring them to the attack of plain and definite problems, and the oral discussion may be used as a means to intensify the struggle with these problems.

9. Oral instruction which involves free discussion, question, and answer, etc., is difficult to manage. It is apt to run to waste and to end in loose, incoherent work. The solution to all these difficulties seems to lie in the thoroughness with which the simple, fundamental line of thought, or succession of topics, has been worked out, and in the fidelity with which the essential topics are kept clearly in mind. The art of skilful questioning depends largely upon finding the pivotal question in any important topic,—the one which brings its main problem clearly to the front.

10. It is one thing for the teacher to do his duty in oral lessons and another to get children to do theirs. In good, oral teaching at least half the burden

of work must be carried by the children. This again calls for a variety of skill and device. In the midst of the presentation and discussion of a topic children need to be pointedly and skilfully questioned from time to time, so as to be thrown back upon their own resources, to make use of previous experience, and to think and judge correctly. Such questions force children to self-activity and original thought. When a topic has been properly presented and discussed, it falls to the children to reproduce it with reasonable fulness and accuracy. In this respect it is the teacher's function to hold the children to a strict performance of duty, else oral instruction will degenerate. When the children find that this requirement is unavoidable and sure, they will be prepared for the effort. It will also take away from the teacher the danger of talking too much. In oral instruction, class attention is almost an absolute requirement. Not only is a strong control desirable, but close watchfulness to detect inattention, readiness to throw out a question or hint to call back the wandering thought. Variety of tests may also be employed, brief, written tests, board-work, map-drawing, as well as oral reproduction.

## CHAPTER VIII

### CORRELATION OF GEOGRAPHY WITH OTHER STUDIES

ON account of the complex nature of geography, it being made up of materials derived from many sources, its connections with other studies are numerous and close. As compared with other studies it seems to be the most companionable of them all, there being scarcely an offshoot of knowledge that does not find shelter under the broad wings of geography.

In some of the principal schemes for correlating studies, geography has been regarded as the mother study, the one which would naturally be the centre in any plan of concentration. We will first inquire into the number and character of these relations which geography bears to the different studies.

The natural sciences are usually thought of, not only as having many intimate relations to geography, but as actually furnishing a large part of the warp and woof of geography. The minerals, vegetables, animals, and all the physical objects and phenomena of earth, air, and water which make up the peculiar realm of natural science supply also the subject-matter of geography. Geography deals with all these



things from a peculiar standpoint which we call the geographical, but they are the same materials which the various natural sciences deal with, each from its own point of view. Geography, therefore, is very close kin to the biological and physical sciences, and has some of their blood in its veins. Close, however, as these relations are they do not obliterate the lines between studies. The same object may be handled by two or more separate sciences. The white pine may be the subject of one or more pure science lessons or it may be described as the chief lumber-producing tree in the great pine forests of the North, — a geographical topic.

In this manner geography reaches out into all the fields of natural science and lays hold of objects which it uses for its own purposes; for example, stratified sandstone, granite quarries, volcanoes, salt beds, coal strata, iron mines, tropical forests, river valleys, the sheep, the cow, the camel, the sugar-cane, the silkworm, the ocean currents and tides, the winds and rains, the salmon, cod, and whale, the plateaus and mountains, the orange and apple, the wheat and rice, the wild fruits and animals, and hundreds more of objects from the realm of nature.

It may be observed that wherever geography selects an object from any one of the sciences, she turns it into some channel of direct utility to man. Whether for weal or for woe, geography is an intensely utilitarian study. Rivers which are useful to man for naviga-

tion, for water-power or for recreation or scenery are favorites with geography; forests which supply lumber, bays full of oysters, mountains veined with gold, plains yielding heavy crops, winds and currents which help or hinder the sailor, are of great geographical importance.

Any scientific object which does not contribute directly to man's luxuries or necessities receives a cold shoulder from geography. Geography does not often throw much light upon purely scientific objects or inventions, but she is proud and liberal in showing their utilities. Geography would never explain the principle of the steam-engine, or the safety-lamp, but would show how indispensable they are in manufacture and mining.

Geography, therefore, is extremely useful in showing everywhere those points of contact where man has gotten the better of nature and has used her resources.

Geography and history also stand in very close companionship. Historians have often emphasized the fact that geography is indispensable to history, as it were, one of the legs on which history stands. On the other hand, geography is greatly indebted to history for the interest which attaches to many of its important topics. Scotland, Egypt, Italy, and Greece would not attract us greatly but for their historic interest.

So completely is history everywhere environed and conditioned by geography that we are inclined to

believe that if all the biographical stories and history studies of the children were treated with full regard to their geographic setting, children would have, without further study, a tolerably complete political and local geography. Many of the early history stories give a most graphic and realistic description of the topography and climate of the important parts of our own country and of other lands, oceans, and hemispheres. So mutually helpful and illuminating is this light thrown upon each other's work by history and geography in several grades of our common school course, that we have laid out these studies on parallel lines. For example, the geography topics of the United States are paralleled by history topics for the same year, treating the same regions of country, and likewise with Europe and other lands to some extent.

An examination of our whole course of study in geography will show that historical considerations have largely shaped it, first America fully treated, then the movement toward Europe with an elaborate study of its large topics, and later the journey outward from Europe to the rest of the world.

Geography, as it seems, more than any other study, makes a free and liberal use of all possible modes of expressing its ideas, whether by oral and written language, drawing of maps, diagrams, and pictures, or by manual constructions involving those simple objects and processes which geography is most interested in.

In the geography lesson children have as good an opportunity for exercising their powers over the English language as in a reading or language lesson ; they often do as much drawing as in a drawing period ; they work out the construction of a canal-lock, a loom, or a mill-race and wheel, as in a series of manual-training lessons. In recent years there has been a great development of these expressive phases of geography. They lead to a much greater clearness and mastery of geographical concepts.

On the other hand, it is a notable discovery to find that drawing is not an isolated art but is indispensable as a means of better grasping and expressing another subject.

Geography tests all other subjects in the school course as to their value, and asks bluntly, "What help can you render us in geography?" Here, again, geography descends to the purely practical, and forces the question of direct utility.

When we consider how much teachers of special subjects, like drawing and arithmetic, are inclined to build a wall around each specialty and hedge it in against outsiders and thus create a cosy nook where they may be secure from outside intrusion, what shall we say about geography, which goes leaping over all fences, disregarding all privacy, and laying every field and grove and garden under contribution? Geography is an obtrusively democratic, utilitarian sort of study. It is a kind of disagreeable upstart, popping up

in all the most inconvenient places among the prescriptions and aristocracies of studies, and, with an air of equality, says to its neat, well-dressed companions, "Roll up your sleeves, come here and give me a lift. I wish you to help pump muddy water out of a coal mine, to find a good fertilizer for a sandy field, to extract sugar out of beet-roots, to build a railroad to the top of Mount Washington, to sketch me a view of a scene from the top of the mountain."

How disagreeable this rude familiarity is to the refined patrician taste of drawing and literature, of arithmetic and grammar, can hardly be expressed in polite language. Can it be surprising that the word "correlation" has become a word of evil omen?

Arithmetic has managed thus far to stand aloof from these modern troubles and confusions and to maintain its own independent race-course for the training of athletes. But the clock has already struck the fatal hour for independent, isolated arithmetic.

Nearly every important topic in geography needs to be analyzed and illuminated from the quantitative point of view. In the study of the grocery business in third or fourth grade we must measure various products with the standard gallon, pound, bushel, barrel, foot, and dollar. To understand a few of the main risks and chances in the grocery business in any sort of a practical way, we must apply these standards to an interesting variety of simple arithmetical problems. A good share of arithmetic

could be taught in a grocery store, in the natural order, without hunting out conundrums.

In dealing later with the subject of irrigation, in measuring distances, slopes, excavations, the flow of water, the acreage and the quantity and value of crops, the standard units of measure are used at every step. The arithmetical problems marked out illuminate the whole topic from the quantitative point of view. The same is true of all topics in agriculture, mining, manufacturing, and commerce.

In dealing with rivers, plateaus, mountains, and all physiographic processes, there is no clear understanding without applying definitely these arithmetical, quantitative standards. There is no new discovery in all this. It has long been known that arithmetical standards underlie all the work in the natural sciences, in industrial occupations, and in geographical forms. Arithmetic also has drawn a multitude of practical problems, so called, from all these sources. None the less, geography has not been correlated with arithmetic. Teachers have not set to work to illuminate geographical topics from the quantitative point of view. To use arithmetic systematically as an instrument for clearing up complex geographical notions would tear down most of the fences between geography and arithmetic. Arithmetic must come down into the plain from its castle on the height to grind corn, dig canals, build houses, hoist the coal, drive the engines, and look after the factories, shops, fields, and mines.

In this discussion of correlation we find that geography has her finger in every pie, that there is scarcely a fact or principle in the whole range of studies which geography may not feel free to appropriate to its own uses.

What advantage has correlation to offer to make up for all this irritation, to say nothing of the confused and fenceless condition in which it seems to leave the studies of the school course?

Let it be observed first of all that geography, more than other studies, has domiciled itself among men in the midst of their homes and usual occupations. It walks directly into the market-places, homes, factories, mines, and fields where men are at work. It observes, studies, and sympathizes with the labors, amusements, and hardships of the people as they are beset by climate and physical surroundings. Dealing thus with the actual conditions of life, it sees the true and necessary relations in which different departments of knowledge stand to one another. It finds that things widely separated in the studies of the schools are closely jostled together in life. The sciences, music, mathematics, language, reading, and history are all threads woven together into one fabric which is constantly poured forth from the roaring loom of life.

This intense interplay of the different active forms of knowledge in the conflict of life is the foundation of all correlation. The causal connection between

different kinds of knowledge, the absolute dependence of geography upon geology, history, and language, and other studies, as revealed in practical life, has forced geography into this emphasis of the relations between studies. Arithmetic, language, drawing, and natural science are actually present and noticeably influential in every lesson in geography. No topic can be understood except by tracing out these causal relations between studies. No good thinking, no real insight into the world as it is, can be attained except by knowing these correlations.

Geography, therefore, is doing nothing more than recalling us to our senses, teaching us that we have wandered from the track in giving such extreme isolation to the separate studies.

It is, however, not so difficult to give strong reasons in favor of a closer correlation of geography with other studies as to work out a feasible plan for its accomplishment.

The difficulties in such a plan, and in overcoming them, we will attempt briefly to point out.

1. A course of study in geography must be worked out which contains a well-selected series of great units of study, involving all the essential phases of geography. Each of these units becomes the centre for a full treatment of a topic involving its correlations with other studies.

2. The topics of study in geography, history, natural science, and other studies must be run parallel to one



another, so as to meet the needs of children and to allow of a natural and many-sided correlation between the studies. As yet, courses of study have not been laid out with much regard to these frequent interchanges, courtesies, and necessary connections between different studies. When these preliminary conditions have been satisfied and we are supplied with a well-arranged course of studies along all lines, the teachers who work out this plan to its completion have special trials.

3. There is danger of confusing and mixing studies. In stepping across the boundary into any related branch, there is peril of losing the connection with the fundamental line of thought in the first study. Experience has shown that this danger is a real one and that even good teachers get on to side tracks. In geography, especially, it is easy to become so interested in the science or history topics suggested by a geography lesson as to spend too much time upon those related topics. In such cases, it is necessary for the teacher to hold clearly in mind the central idea of the geography lesson and to make use of the related science or history only so far as they directly illuminate the geography. The moment the teacher allows himself to shift the centre of thought to the related science or history topic he is lost. Good teaching requires, therefore, great clearness and well-balanced judgment.

4. In order to correlate studies successfully, teachers must be well posted on nearly the whole

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course of study, including not only the different branches in any one grade and their relations to one another but also the same for one or two grades preceding and following.

The wide range of the correlations of geography with nearly all the studies of the school course has been fully pointed out. The general character and value of these correlations need to be well understood, though the teacher cannot well be an expert in all the related subjects. It may be safely said that every teacher should be well equipped both in the knowledge and in the application of the principles of method throughout the whole course. These are broad demands, but it is difficult to see how children can be well taught by teachers of less breadth and detailed knowledge.

## CHAPTER IX

### INCIDENTAL TEACHING

IN geography study there is a tendency to spread abroad over a great field of subjects, and, what is worse, to give emphasis to second or third rate matters, to minor and incidental objects, which should be made wholly tributary to the large points of view.

Unfortunately, schoolmasters, in spite of the best intentions, drift into a number of favorite exercises of a strictly formal pattern and of a wholly secondary value. Such a statement as this needs to be abundantly illustrated and clearly proven rather than thrown at teachers as an offensive criticism. We will take some pains, therefore, to specify and explain our standpoint.

It is well known among all that a great deal of the time of children in both study periods and recitations is spent in merely naming and locating places, in telling boundaries, in pointing out the cardinal points and intermediate directions of the compass (in early work), in naming catalogues of products for states, in printed map questions, and in strict formal reviews of these same things. In the eyes of most teachers this

will not seem a serious charge because by far the greater part of their work, as planned in the textbooks, is of this character.

We are willing to go on record with the statement that these are in no respect the main things in geography. At the same time we claim no originality for the statement nor for the idea that underlies it. Geography is not a set of drills any more than theology is a set of rules for ceremonial devotion. No amount of strenuous assertion on the part of schoolmasters that these things are absolutely necessary and that the discipline secured is excellent can lift them from a wholly secondary to the chief place in geography. Quite an amount of machinery and technique are necessary for teaching geography well, but we are not willing to sink the whole subject to the machine level and to forget that certain ideas of superior quality and strength are what give motive power to all the machinery; in other words, that geography is primarily a study of certain ideas and interesting questions of men's relations to the earth upon which they live and to one another.

But in taking up this position we find ourselves flanked by a strong battalion of prominent writers on geography and even scientific geographers who insist, for example, that the earliest lessons in geography should be sharp and repeated drills in fixing the points of the compass, and in early exercises in accurate map-making, beginning, of course, with the school

grounds. The defence offered for the severely formal cut of this early work in geography is that, by a close analysis, it gives the children at the start a clear grasp of the simple elements upon which all geography is based,—the ideas of place, direction, and relative position. To fix this important notion of place and direction clearly in the minds of children at the very beginning, many teachers and writers are willing to resort to a systematic drill. This initial drill we claim is unnecessary because these same notions are best mastered incidentally in connection with topics of real interest.

A few years ago the very first lessons in the little primary geographies were given to a simple treatment of mathematical geography, based upon this place notion as fundamental. But these lessons are now abandoned. We do not question the primary value of the notions of place, direction, etc., but claim that they should always follow in the wake of topics of larger human interest. Just before starting out upon an excursion to the fruit farm or the blacksmith's shop, let us ask the children the direction of our journey and which ways they must take in returning to their separate homes. There are dozens of situations where the children will need to know the directions, and these are by far the best places to teach them. As an incident to excursions, map-making, and many other topics, place and direction should be frequently pointed out; but to waste time in separate lessons on

this subject is one of those pedantries from which the schoolmaster finds it hard to break loose. It is worth noticing that, in a parallel line of work, in early reading many of the old formal drills on alphabets, phonic exercises, and repetitions have been dropped out by good teachers, the thought being centred upon interesting sentences and stories, and the necessary forms are mastered as much as possible in an incidental way.

And yet the time that may be saved in this manner in the primary grades is trifling compared with that possible in the higher grades. What quantities of time have been wasted in these grades in learning and droning over the mere name and location of places! As if there were a virtue in this! It might be something to know where heaven is but better to know the conditions of entrance.

The importance of the place idea is often illustrated by such places as Pittsburg, Chicago, and Minneapolis. No better examples, however, could be given to show the emptiness of the place idea when taken by itself. One hundred years ago the spot where Chicago stands occupied the same place relations to the Great Lakes and the Mississippi Valley that it does now. The things which now make Chicago an interesting object of geographical study are the physical and human forces at this centre. The place idea has in itself no content. Even the deepest of philosophers have had difficulty in thinking and explaining it. The main

point to be considered is that the centre of thought and interest is not the place idea but the objects and their relation to one another.

The art of making and interpreting maps has been frequently set up as a distinct department of geography. But maps in the common school should be used wholly as a means of interpreting and expressing knowledge. When an important topic is under consideration, as the Amazon River, the map should be used as a help, an incident. To spend weeks in the execution of maps seems to us a mode of abstracting the mind from the essential subjects and largely wasting it upon isolated things. The tasteful and artistic execution of maps is a pleasant hobby for the schoolmaster and an agreeable and disciplinary entertainment for many of the pupils, but, when measured upon the standard of its real value to the central purpose of geography study, it is a dilettante performance. There are many topics in geography where both teacher and pupils should use ready map-sketching as a quick and graphic means of explanation. Accuracy in small details of coast-lines, river-windings, and boundaries are not needed, and momentary sketches, correct in general outline and proportion, meet every requirement. For such purposes a map of North America or New York State or Boston can be sketched in less than a minute on the blackboard. This makes map-drawing wholly tributary to the expression of the thought, little more

than a device incident to the skilful treatment of a topic.

It is, perhaps, still more difficult to convince the scientific students of physiography that the materials of their chosen science are but contributions to the main stream of geography taught in the elementary schools. In dealing with the Hudson River, for example, we do not begin with a history of the river from the standpoint of physiography but give a descriptive account of its physical, commercial, scenic, and historic points of interest, that is, a sort of panoramic view of the whole to which physical geography contributes some elements. The unit of thought is the whole river in its close mingling of physical, commercial, and historic characteristics. There is a decided advantage in not isolating the physiography of the Hudson from its other elements. The closer the connection and interdependence between the physiographic and commercial and other facts, the more significant will all the facts become, because each is seen in its necessary relation to the others. Physiography, as a science, does not come to light in the common school, but its best elements add greatly to the meaning and force of all geography topics. They have found their proper auxiliary position in geography instruction.

The organizing centres of geographical instruction are none of these incidental things (notions of place and location, map-making, physiography, etc.) which



we have been describing. These centres of thought are the geographic types, each of which contains some dominant idea. In our course of study we have tried to select a series of these great types as the real basis of each year's work. If we can make it appear that these type ideas are the real centres for organizing the varied facts of geography, we shall be able to demonstrate that much of children's time is now wasted in learning catalogues of products, lists of names in tracing lessons, the capitals of states, and in tedious reviews and repetitions.

For example, in treating Minneapolis as a trade centre for making lumber and flour and shipping them (the lumber to the Western prairies, the flour to Eastern markets), we have a very striking illustration of a trade centre. By comparisons with the cities on the upper Mississippi, from Minneapolis to St. Louis, we found that Winona, La Crosse, Dubuque, Davenport, Clinton, and St. Louis were all centres for the lumber and flour trade for very similar reasons to those of Minneapolis. In other words, Minneapolis is almost a perfect type of all these cities of the upper Mississippi. We are surprised a little later that Milwaukee, Chicago, Saginaw, Detroit, Cleveland, Buffalo, Albany, Bangor, and Augusta are centres of the lumber business in a manner strikingly similar to that of Minneapolis. In some cases lakes, in others rivers and canals, serve as means by which logs or lumber are brought to these cities and then shipped

by water or by rail to the markets. In all cases these cities lie between the forests on one side and a large population on the other side, needing and consuming much lumber.

Notice now that in following out this single line of thought, Minneapolis as a type of trade centres in lumber, we have located and named all the larger cities and tributaries of the upper Mississippi River and have seen a close connection between the great forest belt of northern Minnesota and Michigan with the rich and boundless prairie region to the west. Again we have located all the Great Lakes and their chief ports, noticed one of the chief reasons for their importance, likewise the cities of Albany, Augusta, and Bangor, the Hudson, the Kennebec, and the Penobscot. The great forest belt stretching across the country from Maine through Canada to northern Minnesota has been located and its important relation to the large cities and populations southward explained. We cannot take the space to indicate other important facts in regard to the climate, resources, canals, traffic routes by water and rail, mills and factories which are necessarily incidental to the treatment of this large topic.

The main point we wish to illustrate is that a single first-class type study, like Minneapolis, tends to organize around it a varied and instructive body of facts. Not one of these facts but is seen in its necessary relation to the others. Such a topic throws a bright

illumination over a large area of geographic knowledge and shows clearly the relations between the facts. All these facts, however, are but incidents in the treatment of the main topic. They face about and swing into line at the command of a central controlling thought. Would any one claim that it would be better to learn and locate all these cities, lakes, rivers, and regions without reference to any unifying and instructive idea, as so many independent geographical objects?

It would not be difficult to show that a relatively short series of type studies of North America may be selected which have the power to organize nearly all the important facts of this continent in their natural and significant relations.

The above is but one among many equally good illustrations, to show that nearly all the important facts of geography should be learned, incidental to the treatment of large geographic concepts or type ideas. Let us return now to the statement, which is probably true, that much the greater part of the geography study of children is spent in learning the names and locations of places, in cataloguing products, in map-sketching, map questions, and review drills, and this not in subordination to controlling ideas but as so many sheer drills. Is it too much to say that we are losing sight of the essentials and are satisfied to mumble the formalities of geography? It is, in fact, trading off the substance for the shadow of knowledge.

Besides the dulness and lack of insight, which are the natural fruitage of such formal and spiritless study, it is a great waste of time. The facts learned in this way, having little coherency or intelligible explanation, slip out of the mind and drop back into oblivion. So we must have more drills, reviews, and repetitions. The threadbare answer to all this, that such drills are excellent discipline, has lost almost all its force, since our school course is now becoming so congested with the variety and quantity of materials, that we are forced to call for simplification and reduction of waste. Simplification is provided for in the selection of a few types or organic centres of thought ; an extravagant waste of time and effort is avoided by confining our attention to those facts which are necessarily incident to the few central topics of study.

The important principle which we wish to illustrate in this chapter is that the great body of important facts in geography should be learned incidentally and in their natural subordination to the real centres of geographic thought. To set up all these varied facts as distinct and separate objects of study, leads to a dreary round of memory drills with a small expenditure of thought and intelligence.

We have had numerous illustrations to prove that most of the review drills may be dispensed with by a constant system of comparing later with earlier objects of study and with great increase of interest and thoughtfulness. This plan of comparisons is, therefore,

a means of making reviews incidental and far more effective.

Among schoolmasters the tendency is marked, to bring secondary matters into great prominence, to make a merit of drill and routine, to lose sight of the overwhelming importance of the central, organizing ideas of a study. The principle of incidental teaching is a constant reminder to force back all these secondary matters to their proper place of subordination, where their real value is great. To hold on to the trappings and mere formalities of instruction to the neglect of the essentials is the old, oft-repeated error of form versus spirit.

Geography, being such a complex subject, drawing its constituent materials from the whole wide field of the natural sciences, as well as from history and the social sciences, is compelled, more than other studies, to guard its central strongholds of thought and to bring all other subjects into proper subordination to these centres.

## CHAPTER X

### TYPES RUNNING THROUGH THE GRADES

#### A SERIES OF TOPICS RUNNING THROUGH THE GRADES ON THE STUDY OF GOVERNMENT

(1) The local town government. (2) State government at Springfield or of any other state capital. (3) The government at Washington. (4) Government of England centring in London. (5) Berlin and the Kaiser. (6) St. Petersburg and the Czar.

This series of topics, beginning with the local matters familiar to the child in his own home and reaching out gradually to the state and nation in which he lives, and in the later grades leading to the study of foreign governments and their comparison with our own, gives us an illustration of the successive topics in one great geographical subject. Each of these will be briefly treated as follows :—

1. The local town government. Town councils elected by the people are familiar to the children and should be described. They have charge of the streets, sidewalks, bridges, appointment and payment of the police, waterworks, gas or electric light plant, and expenditure for other purposes. The mayor of the town

is also an executive officer who is directly responsible for the ordinances which are passed by the council. The justice of the peace in the village tries the cases which come before him under the law. We have, therefore, in the village the law-making power, the administrative authority, and the local judge for the trial of cases. Matters concerning which laws may be passed, as streets, bridges, etc., ought to be mentioned; also the granting of licenses for the sale of tobacco, liquors; concerning bicycles, pedlars, the care of the poor, and of tramps; concerning health, the amount of tax levy, and other matters. If the children live in a small city, or even in a larger city, these topics may be somewhat enlarged, and the importance of the topics just mentioned may be illustrated in a more striking way. This topic is also connected with the affairs of the local school board elected by the people, which administers the affairs of the schools, provides for the buildings and teachers, and the expenditure of money for the general purposes of education.

A second topic not mentioned in the outline, well worthy of study, is that of the county government as centring in the court-house, with its county officers and their administration of county affairs. An excursion by the children to the court-house, including a visit to the court room and to the office of the county recorder where the titles to property in the town and county are preserved, is a source of excellent

knowledge. Who pays the expenses of the county government? The salaries of the county officers? The cost of the county court-house and the expenses of the county court? The topics which we have just referred to should be handled in the third or fourth grade as an essential part of the geographical instruction which embraces the leading topics of home geography.

2. The second chief topic in connection with the government will be treated in the fourth grade, perhaps a year later, and deals with the government at the state capital, as, for example, Springfield, Illinois. The state Legislature, consisting of the House and the Senate, is made up of members selected from the different representative and senatorial districts of the state and elected by the people. This legislative body of two houses makes the laws of the state under conditions imposed by the state constitution. Laws made by the state Legislature deal with railroads, as, for example, the fare to be charged, precautions at crossings, bridges, etc.

State laws also are made upon subjects of state taxation, the building or repair of canals, granting charters to cities, in regard to temperance and the manufacture of liquors, in regard to the school affairs of the state, also concerning the state institutions for the defective classes, as the orphan asylums, blind asylums, insane asylums; also for the state schools of agriculture, the normal schools, and the



university. State laws are also made in regard to the coal mines, building and loan associations, insurance companies; also in regard to the state militia and equipment. All bills must be agreed upon by both houses of the Legislature before they become laws and are also generally signed by the Governor of the state. The Governor, who is also elected every four years by the people of the state, lives at Springfield, and with his cabinet is charged with carrying out the laws of the state. He has the power of appointment of many of the officers and commissions, as, for example, the governing boards of the educational institutions and many other state commissions. He is also at the head of the militia of the state, and calls it out in case of serious disturbance or war.

A third division of the government at Springfield consists of the state Supreme Court, which meets at the capital to try cases which are brought before it under the laws of the state. This court of judges has the final decision of important cases arising under the state laws, for example, the recent reapportionment of the state. But a law passed in the Legislature was lately pronounced unconstitutional by the Supreme Court, and thereby it ceased to be a law, although passed by the state Legislature and approved by the Governor.

In the city of Springfield is found the state capitol, a massive building built at the expense of the state,

in which are found the large assembly rooms of the House of Representatives and Senate, state Supreme Court, and the offices of the Governor and other state officials. A picture of this building should be shown to the children and the principal rooms explained; also the other interesting buildings and monuments found in the state capital, as, for example, the old state-house, now the county court-house at Springfield, the old home of Lincoln, and the Lincoln monument at the cemetery. The railroad or other connections of the state capital with other parts of the state should be noted, and the most important state institutions should be located.

No such exhaustive treatment of any other state government than that of the home state will be found necessary as the children advance to the study of other surrounding states. The capitals of the various states will be incidentally located as we study the other states of the Mississippi Valley and of the country.

3. In the fifth or sixth grade the topic of government comes up on a larger scale in connection with the study of Washington as the capital of the United States. It should be made instructive and interesting by means of pictures of the great public buildings, important monuments, and historical objects of interest in the city. The great Capitol building will naturally be the centre of this topic, and the three principal headings will be Congress, the President, and the Su-

preme Court. The law-making power, or Congress, should be explained in the concrete treatment of the laws which are passed by Congress; for example, the late tariff law which fixed the tariff on many kinds of manufactured goods imported into this country; the internal revenue law which levies duty upon tobacco, whiskey, and luxuries produced in our own country. Laws are also passed relating to money and coinage, to commerce, agriculture, patents, divorce, immigration, peace and war, army, navy, post-office, relations with foreign countries, and a great many other important subjects. It should be seen that these laws are of such a character as to apply equally to all people of the different states and not to any particular locality.

Pictures should be shown in the geographies of the House of Representatives, Senate, and some of the leading men familiar to the public should be named and associated either with the Senate or with the House. The President at his home in the White House, his duties, and responsibilities will deserve some treatment. In what way does the President of the United States directly influence the affairs of our own home? What men has he appointed to office in our town, county, or state? What influence has he over the laws that are passed in Congress? Why is he called the chief executive officer? How is his cabinet appointed, and of what does it consist?

The Supreme Court has jurisdiction over all important questions arising under the constitution of the United States. What sort of cases does it try? Examples of its power in this respect must be cited; as, for example, the more recent transactions in the interstate-commerce commission, and other cases. A short account of the history of the city of Washington as the seat of government will be appropriate in this connection. Why does it lie so far to one side of the country? At the time of the founding of Washington, what was the relation of this city to the population of the country? How large a city is it? How does it compare in size with the largest cities, Philadelphia, New York, Chicago, etc.? Study the map of the city of Washington, and locate two or three of the principal streets and chief public buildings.

Compare now the governments of the United States at Washington and of the state at Springfield, and even of the local city or village, and bring out the fact that the government in all of these cases falls into three divisions or departments: the executive, legislative, and judicial. In what relation do the laws of the city, state, and nation stand to each other? How are the officers of these three different kinds of government chosen?

4. In the seventh grade, when we come to study the central government of England at London, we shall find the most prominent object, the Houses of Parlia-

ment on the Thames. An excellent picture of this building can be found in one of the geographies or in Shepp's photographs, and from a guide-book the ground-plan of the building, showing especially the House of Commons and the House of Lords, may be secured.

In the making of the laws the two houses correspond closely to our House of Representatives and Senate, and the general plan of the building, with a central hall or dome and the two great chambers on opposite sides of it in the wings, is the same as that of the national Capitol at Washington and of the state capitol building at Springfield, and of many other state capitols.

Upon inquiring into the manner of choosing the members of Parliament, the contrast between our Senate and the House of Lords appears. Our senators are chosen by the state legislatures, the lords are mostly hereditary in their rights. They are born lords, and with this is connected the right of primogeniture, long since abolished in this country.

On the executive side the prime minister and his cabinet correspond to our President and cabinet. Their duties in the main are similar. But at one corner of the Houses of Parliament is the great Victoria Tower, through which the King passes to his robing rooms. The mention of the King brings out with great pointedness the one marked contrast between our government and that of England. The

King, or hereditary monarch, ruling by right of birth, is the social and political head of England, signs all laws as does our President, calls upon some one to form a ministry, etc.

The Supreme Court of England has in general the same functions as that body with us. The striking difference is the royal family. It may be well here to locate the King's palaces: St. James and Buckingham, near the Parliament houses in London; Balmoral, with its immense estates, in Scotland; Windsor, on the Thames above London, and Osborne House, on the Isle of Wight. Excellent pictures and descriptions of these are given in Shepp's photographs.

All these, like his kingly power, are held by hereditary right by the King, and the expense of keeping up these establishments and the other palaces and the income of the royal family may be referred to. The great lords of England, with their castles and large landed or city estates, rest upon the same basis of primogeniture and heredity as the King.

As we pass later to the treatment of the government of other states in Europe, we shall find this fundamental comparison with our familiar government at Washington the essential basis of interpretation. In France we find a republic.

5. In Germany, at Berlin, not the *Reichstag* and *Herrenhaus* are the main objects of interest, but the palace of the Emperor, the old princely *Schloss*, and

the institutions of royalty. The Emperor, or *Kaiser*, plays a much more significant rôle than the King or than our President. Germany is still largely ruled by its princes, though the power of the legislature is steadily growing. Moreover, the army behind the Emperor is much more necessary, and is more completely under the control of one man, than in England, to say nothing of the United States. The situation of Germany, surrounded by powerful and jealous enemies, is favorable to royal power and the maintenance of a splendid army.

6. When we come to Russia, the significance of arbitrary power is made striking and prominent by the absence of a legislature in which the people are represented and share in law-making. The concentration of executive, legislative, and judicial power in one man furnishes the most striking contrast to our system of government ; and now by comparing the governments of the United States, England, Germany, and Russia, we are able to mark out the steps that show the different grades in all governments.

In the natural course of geographical studies we shall have occasion thus to deal definitely six or seven times with government as a topic. Can there remain any doubt that the method of comparison by which the later forms of Europe and Asia are compared step by step with our own government and with each other is the proper manner of treatment ? The best review of our own government is this de-

tailed comparison of what has been learned of our own with the similar and yet different forms of England, Germany, and Russia.

#### A SERIES OF STUDIES ON DESERTS

##### THE GREAT BASIN OF UTAH AND NEVADA

1. Between the Rocky Mountains of Colorado on the east and the Sierra Nevada of California on the west lies a region of desert wastes, salt lakes, and plateaus cut up by short mountain-chains, whose drainage has no outlet to the sea. It is a broken plateau between four thousand and five thousand feet above the sea-level, and is a little larger than France.

On the south lies the plateau of the Colorado River with its deep canyons, separated by only a slight watershed from the great basin. On the north also the watershed between the Snake River and the great basin is irregular and difficult to determine.

This whole region is arid, having only a slight rainfall, owing to the high Sierra Nevada range, which intercepts the wet winds coming from the Pacific and causes their moisture to fall in rains and snows upon the Western mountains. As these winds pass over to the plateau, they are mostly dry.

On the east, the great Rocky Mountain chain likewise takes most of the moisture out of the winds from the Gulf of Mexico and the Mississippi Valley.

In addition to these causes the plateau in summer-time is hot, and the ascending column of hot air dissi-



plateaus and receive rains are covered with forests, especially of pine and other evergreen. On the eastern slopes of the Sierra Nevada are also found oak and deciduous forests.

In the later study of Europe, Asia, South America, and Africa, we shall meet with arid tracts or deserts which remind us strongly of the conditions in the great basin of Utah and Nevada.

In the peninsula of Spain and Portugal we find a central plateau, bordered along the coasts by fruitful and well-watered lowlands or valleys. As the winds move toward central Spain, they drop their moisture on the fringing mountain slopes, so that the low plateau upon which Madrid is built is almost forbidding in its aridity.

In southern Russia and Siberia, in the depressions of the Caspian and Aral Seas, are found extensive salt deserts bordering these seas, proclaiming, as in the deserts about Salt Lake (only on a more extensive scale) the former wide extent of the Caspian. These salt plains about the Caspian are dreary desert wastes, hot and stifling in summer and bleak and cold in winter.

The great desert of Sahara, especially the western part, south of the Atlas Mountains, has some strong marks of resemblance to our Western basin. The Atlas Mountains catch the moisture brought by the western winds from the Atlantic. The small streams flowing southward from the Atlas Mountains are lost in the sands of the Sahara, like those from the

Sierra Nevada. At some points the desert is below the sea-level, and shows brackish and salt lakes.

The hot, blistering sands and rocks send up a column of heated air that dissipates any clouds that might bring rain to the desert. Only where mountain-chains cross the desert, as the Hogar chain that separates the western Sahara from the Libyan wastes, is there rainfall. A part of the year these mountains are covered with snow, and streams descend from the melting snows and rains and are lost in the desert, creating oases, however, and fruitful tracts.

The only vegetation found in the deserts, apart from the oases, is the artemisia and thorny mimosas, corresponding to the cacti and sage-brush of our Western deserts. In the Sahara, also, irrigation from the short streams and from artesian wells is the source of the groves and fruits which mark the scattered oases.

The Sahara, like our Western deserts, is not a level plateau, but while it averages about 2,000 feet above the sea, a small district south of Algeria is 165 feet below the level of the sea and is the bed of an ancient salt lake. To the south and east the land rises into plateaus and mountains from 3300 to 6600 feet high. Many ranges of rocky ridges and mountains or sand-hills traverse the desert, leaving deep valleys between which are the beds of ancient lakes or rivers.

Lying farther south than our desert tract, it is much hotter, and the vegetation of its oases is tropical: date-palm, orange, and tropical fruits.

The Sahara, the greatest of all deserts, is about three thousand one hundred miles from east to west and on the average six hundred miles wide, about two-thirds of the size of Europe; but nearly a third of this vast district is occupied by the oases.

But the Sahara is only one of a great series of deserts extending across Asia and Africa. Arabia, especially in its southern part, is one plateau desert with smaller wastes to the north. It is really a continuation of the Sahara, only slightly interrupted by the narrow strip of the Nile and by the expanse of the Red Sea.

Still farther to the northeast, "the principal part of the plateau of Iran, occupying a quadrilateral space, surrounded by mountains which stop the rains in their passage, consists of sterile solitudes, some covered with saline beds, the remains of dried-up lakes, others spread over with shifting sands, or dotted over with reddish colored hills. It is continued toward the east by the deserts of Afghanistan and Beloochistan, which are not so large and much easier to travel over" (Reclus).

North of the Himalayas, after touching north-western India, the great chain of deserts, protected from the rain-bringing winds by the mighty ridges of mountains, extends across Tibet and Mongolia. "The eastern part of this belt is called according to the language Cobi or Chamo, that is to say, the desert *par excellence*, and from its enormous dimensions cor-

responds with the Sahara of Africa, situated exactly at the opposite extremity of the long chain of solitudes which stretches right across the old world. The mirage, the moving sandhills blown up into eddies, and many other phenomena described by African travellers are found in certain districts of the Cobi, just the same as in all other deserts. But the cold here is exceptionally intense, on account of the great height of the plateau, which is on an average 4,950 feet, and the vicinity of the plains of Siberia which are crossed by the polar wind. It freezes nearly every night and often during the day. The dryness of the atmosphere is extreme, there is hardly any vegetation, and a few grassy hollows are the only oases of these regions. From Kiakhtha to Peking there are only five trees for a distance of 400 to 500 miles, which is the width of the desert in this part of Mongolia. The Cobi, however, like the Sahara, was formerly covered by the waters of the ocean; even on the elevated plateaus old cliffs may be noticed, the bases of which are worn away by the waves, and long strands of rough shingle stretch around the area which was formerly occupied by a now vanished gulf" (Reclus).

This study of deserts and arid regions in America, Europe, Africa, and Asia, thus briefly suggested, offers a series of widely separated, yet connected, lessons which should, in the course of geographical study, be brought together. Every time one of these topics relative to deserts comes up for full

discussion, a set of comparisons should be instituted which will bring to clear remembrance the facts previously studied.

With the area, elevation, salt lakes, and deserts, vegetation, mountains, and irrigation of our great Western desert basin as a standard of measurement we may estimate and compare the Sahara, Arabia, the salt steppes of Russia, and the desert of Cobi, and by striking resemblances and noticeable differences acquire a body of definite and well-organized knowledge of this large geographical topic.

Bound up with this treatment of arid regions and deserts are the subjects of irrigation, salt seas having no outlet, and caravan trade routes. Moreover, the subject of trade-winds and mountain barriers, intercepting the moisture-laden winds, must be treated in this connection as chief causes in producing deserts. The peculiar life of the desert regions, the nomad and Bedouin tribes, the tent-dwellers, wandering from place to place in search of pastures, and the remarkably peculiar fauna and flora of these wastes, must be described in order to grasp the meaning of such lands which, in spite of their forbidding aspect, are still the homes of millions of men.

The relation of the deserts to the continents as a whole and to the equator, and their obstruction to commerce, worse than the hardships of high mountains or broad oceans, should be brought clearly into view.

It is easy to see that an elaborate description of our great Western basin, with pictures of its dreary wastes, its salt lakes and salt and alkali plains, its broken and desolate mountains, its dead seas and sinks, its canyons and gorges, its scanty and leafless vegetation, its small patches of irrigated gardens and fields, its shrunk and disappearing rivers, its scorching and glaring heat in summer, will form an excellent groundwork for the understanding of the larger desert plateaus of other continents; especially when the causes are traced to the bordering mountains which stand sentinel to check the rain-bearing winds, when the small populations and difficult trade routes are seen as the results of the surface, climate, and resources of the country thus situated.

It is possible in this way, by building up around these great central topics from year to year, to gather a well-organized body of knowledge. By constant comparison of new with old, the essential facts come more clearly and prominently into view.

#### A SERIES OF STUDIES ON TRADE CENTRES

##### REVIEW BY COMPARISON

In the fifth grade the children have a study of Minneapolis as a trade centre for lumber from the pineries of the North, for wheat and other grain from the West, and for manufactured products brought from the East, which are distributed from Minneapolis and St. Paul as centres of the wholesale trade.

The water-power at Minneapolis is especially important for the flour-mills. The river trade finds its terminus at St. Paul. The railroad and water routes from the twin cities via Duluth and Chicago carry the staple products, especially flour, to New York and Liverpool and to other parts of Europe. This topic is fully worked out in the fourth grade.

When, later, the same year, Pittsburg is studied, they will compare the advantages of the two cities. Pittsburg is the centre for the great iron and steel mills of western Pennsylvania. The iron is obtained from the mountains, and the coal along the valleys of the Monongahela and other streams furnishes fuel for the furnaces. Northward from Pittsburg lie the oil regions which supply Pittsburg with another raw material for its refineries. The glass-factories, requiring other raw materials, are also very important at Pittsburg.

The Ohio River supplies an excellent means of cheap transportation for the coal, oil, iron products, glass, etc., of Pittsburg. A comparison of Pittsburg and its surrounding cities with Minneapolis and St. Paul will bring out the striking points in each case more clearly.

1. As centres for raw products to be manufactured into higher forms. Minneapolis: logs, wheat, and grain. Pittsburg: iron, coal, petroleum, and sand for glass. Pittsburg also receives some lumber, which comes down from the mountains via the

Allegheny and Monongahela rivers. Both Pittsburgh and St. Paul are at the head of steamboat navigation; and yet, in both cases, the upper rivers are used for small steamboats—for coal barges and rafts on the Monongahela, and for lumber rafts and rafting steamers on the upper Mississippi.

2. Manufactured products. For Minneapolis and St. Paul, flour, lumber, barrels, furniture, agricultural implements, and some lesser ones, as boots and shoes. Pittsburgh: steel rails, armor plates, pig-iron, illuminating oil, benzine, vaseline, glassware, lumber, coke, etc.

3. The trade facilities by railroad and by river. Notice on a railroad map the important railroads centring in each of these cities; for example, the Pennsylvania Central at Pittsburgh; the Chicago, Milwaukee & St. Paul at St. Paul and Minneapolis.

4. Both sites of these cities are historically interesting; Fort Duquesne, changed afterward to Fort Pitt, being the most interesting historical point in the Ohio Valley; Fort Snelling, at the junction of the Mississippi and Minnesota rivers, is of special importance in the history of the Northwest.

5. Compare the population of Minneapolis and St. Paul with that of Pittsburgh and Allegheny:—

|                     | 1900    |           | 1900           |
|---------------------|---------|-----------|----------------|
| Minneapolis . . . . | 202,718 | Pittsburg | 321,616        |
| St. Paul . . . .    | 163,065 | Allegheny | 129,896        |
|                     |         |           | <u>451,512</u> |



A similar comparison may be made with Albany and Troy at the head of navigation on the Hudson. Albany is important—

1. On account of the commerce along the Erie Canal and the great railroad traffic from Buffalo to Albany and New York.

2. The canal connecting Lake Champlain with the upper Hudson brings the lumber of the North in large quantity to Albany.

Pittsburg also has a canal connection with Lake Erie by way of Beaver River to Erie. Albany and St. Paul are capitals of the states and the head of navigation of rivers. The population of Albany is 94,923 and of Troy 60,956. The railroad from Albany to Boston passes through the Hoosac Tunnel, one of the great engineering feats. The railroad from Pittsburg to Philadelphia crosses the Alleghany Mountains through fine mountain scenery.

When we come to Europe, we shall find some other cities located like Minneapolis and St. Paul, Pittsburg and Albany, at the head of steamboat navigation of important rivers, *e.g.* Lyons in southeastern France, at the junction of the Rhone and Saone rivers. Lyons is located like Pittsburg, partly on the low plain between the two rivers and partly on the hills back of it. It is the natural outlet for the trade from Switzerland, coming from Geneva, down the valley of the Rhone, and also for the commerce with the north of France, via the Saone River, whose upper waters are connected

by canal with the Seine and with the Rhine. One of the great railroads of France runs from Paris to Lyons and Marseilles. Lyons draws the raw materials for its great manufacture of silk goods from its own neighborhood. The river furnishes excellent shipping facilities toward the south via Marseilles to the Mediterranean countries. The population of Lyons in 1896 was 466,028. Lyons is also a fortified city, having a circuit of defences extending thirteen miles from the city. It has always been during two thousand years a centre of trade up and down the Rhone and Saone valleys.

The points of similarity between Pittsburg and Lyons are quite noticeable, including its location on the flat land at the junction of the two rivers; its excellent commercial outlet down the river; its canals and slack-water navigation in the upper streams; its military importance; its manufactories. Compare also with London, Bordeaux, Hamburg, and Budapest.

One of the important topics for study in the United States geography is the Hudson River, and in Europe, also, the Rhine forms an equally important subject. After they have both been studied, a comparison as follows will form such a review as will be interesting and thought-producing:—

1. Their commercial importance. In both cases these two rivers are great traffic routes, first by water, and second by rail. Important railroad lines run through both the valleys. The Hudson has three

important canals connecting it with Lake Champlain and the St. Lawrence, with Lake Erie and the West, and with the coal regions of northwestern Pennsylvania. The Rhine also has three canals connecting its upper waters with the Danube and the Rhone and the Seine. The Rhine has always been the great central traffic route between Northern Europe and Southern or Southeastern Europe. The Hudson with the Mohawk is the great traffic route between the Lake states of the Northwest and New York.

2. The cities. The number of large cities on the Rhine, as Rotterdam, Cologne, Frankfurt, Strassburg, Basel, Zurich, etc., is greater than on the Hudson, but New York and Brooklyn, on account of their size and commercial importance, would surpass all the cities of the Rhine. In extent the Rhine is eight hundred miles long, the Hudson two hundred seventy-five, but the Hudson is a much larger and deeper river than the Rhine. This is due to the fact that the valley of the Hudson is a drowned valley, the sea having flowed in and filled it up with the sinking of the coast lands. The Rhine, on the other hand, is a delta river which has built up out of the sea a large area of lowland in Holland. In this respect, therefore, they are opposites. The navigable portion of the Rhine is much longer. The Rhine is navigable below the falls of Schaffhausen, although that part of the river flowing through the broad valley from Strassburg to

Mayence is obstructed with shallows. The upper Hudson also has shallows.

3. In point of scenery the Rhine and the Hudson both have great attractions ; the Palisades, the Highlands and the Catskills furnish even more grand and impressive sights than the Rhine between Cologne and Bingen. But ancient castles and churches are not reproduced on the Hudson. Both rivers rise in the mountains, the Alps being much the higher. The Rhine springs from the foot of glaciers, the Hudson from deep lakes of the Adirondacks.

4. Both rivers are famous in history. The Rhine was crossed by Cæsar, Charlemagne, Louis XIV, Napoleon I, and William I of Germany. The Rhine being on the boundary line between France and Germany, has been the scene of many great military campaigns. Its chief cities, Cologne, Coblenz, Mayence, and Strassburg, are strongly fortified. The Hudson, also, during the French and Indian wars and the Revolution, had great military importance.

5. Both rivers, also, have an important place in literature. Irving with his legends has made the valley of the Hudson famous. And the old Indian stories furnish still other legendary material. The Rhine has been famous in song and story for thousands of years. The Nibelungen song belongs mainly to this valley. Both Goethe and Schiller, greatest of German poets, were born and raised in this valley.

Such comparison as this brings into distinct prom-

inence the points both of likeness and of difference. If these points are stated in the form of questions, the children will solve many problems of interest, and will learn to measure, to estimate, and to organize their knowledge. Later in the geographical studies of the children they may have occasion to compare the Danube, the Po, the Indus, and other rivers with the Rhine and the Hudson. In the same way, on a larger scale, the Mississippi River with its tributaries will offer a standard with which to compare the other great rivers of the world, as the Volga, the Yangtse, the Nile, the Congo, and the Amazon. The different functions and characters of great river valleys will thus be brought out with distinctness.

In a similar way a study of Pikes Peak and the surrounding mountains as illustrating the Rocky Mountain system may be compared with Mont Blanc and the Alps, Mount Everest and the Himalayas, and Chimborazo and the Andes.

If the gold and silver mines of Colorado have been studied by the children, they should be first compared with the other gold-bearing districts in our own country—California, Nevada, Montana, and the Klondike—and afterward in the course of study with the mines in South Africa, Australia, and Russia. This will bring the knowledge of the whole subject of gold and silver mining into a certain completeness and unity.

## CHAPTER XI

### COURSE OF STUDY FULLY OUTLINED

#### THIRD GRADE—HOME GEOGRAPHY

##### *Simple, primary types*

##### I. Building materials.

Excursion to a house in process of construction.

Outline. Foundation and floor plan. Draw plan. Work of excavation. Brick and stone masons. Basement windows, doors. Drainage, etc. The framework of the house; beams, joists, studding, rafters, siding, partitions. Plan of rooms. Heating, plumbing, gas-pipes, or wires for lighting. Water-supply. Connection with sewer. Door and window frames. Stairs. Floors. Plastering. Making of plaster; lime, sand, hair. Interior finish. Oak and hard woods. Varnishing. Chimneys, fireplaces. Plan of heating. Tinning, spouting, roofing. Painting, interior and exterior. Ingredients of paints. Tinting, decorating, papering, frescoing. Yard and lawn; walks, trees.

Several excursions at different times in the process of constructing and completing a house are made. The observations made upon these trips are later fully discussed in the class room.

The different kinds of trades and tools employed in the building are noticed, such as masons, carpenters, plumbers, painters, tinnern, architect, plasterer, and decorator. The shops, quarries, and mills from which building materials are obtained, should be mentioned and located, *e.g.* the carpenter shop, planing-mill, tin-shop, the stone quarry, the brick yard and kiln. The close dependence of all the different trades upon one another may be observed. The cost of materials and wages of men may be discussed to some extent. Frequent drawings on the blackboard to illustrate points discussed are helpful.

## 2. Excursions to a garden and farm.

Visits to a near garden in springtime to note the turning of the soil, planting, and growth of vegetables, such as corn, onions, lettuce, radishes, asparagus, potatoes, beets, tomatoes, cabbage, celery, etc. Two or three of these should be followed through the season. A school garden is the best means of following up this work, and gives the children a chance to participate. The use of the hotbed for obtaining early cabbages, and tomatoes is worth studying. The treatment and fertilizing of soils may be observed.

In the fall, excursions to the garden to see the crops and their gathering in are instructive, *e.g.* digging potatoes and root crops, the picking and marketing of tomatoes, cabbages, and celery. The berries and small fruits are equally interesting.

A visit to a nursery for fruit and shade trees, both

in spring and fall, is very interesting, and in winter the budding and grafting may be observed. A visit to a typical farm to see the different fields of grain, pasture, and woodland, the kinds and care of stock, the barns, and granaries, the machines and tools employed, will be very instructive. In this connection a visit to an agricultural implement store is also helpful.

Upon all these outdoor excursions, there is opportunity for incidental observation of the open country, fields, woods, streams, hills, soils, roads, bridges, and various occupations and industries.

### 3. Clothing and industries related to clothing.

Sheep-raising and wool. Cattle and hides. Tanning of skins. The spinning and weaving of cloth. Visit to a carpet-weaver's. Note machinery used. Cotton or woollen mill. The tailor shop. The dress-maker's. The milliner's. The clothing store. The dry-goods store. Variety of goods sold, as cotton cloth, linen, silk, lace, woollens, and straw. Shoe-factory. (Excursion reserved for fourth grade.)

In the third grade a study of raw material of clothing and their production and treatment as illustrated in the home district and in carpet-weaving are in place. The more complex processes of manufacture are too difficult.

### 4. Excursions to shops and stores.

Visit to a fruit store. Kinds of fruits, etc. The bakery and the baking oven. The blacksmith's shop and the wagon-maker's shop. The grist-mill. Mill-



pond and mill-race. The wheel. The elevator and the loading and storage of grain. The grocery store. Variety of products. Visit to the park or to the woods. These excursions are carefully planned and later fully discussed in the class.

5. Incidental extension of the above topics into other states and to foreign lands.

From the lumber-yard to the Northern pineries, also to the yellow-pine woods of the Southern states. Oak and other hard woods from the Ohio Valley. From the fruit store we may trace the orange to Florida and California, peaches to Michigan and New Jersey, apples to New York, Missouri, etc., grapes to California and New York, bananas to Jamaica. Codfish are referred to the fishing-banks, oysters to the Chesapeake and Long Island Sound, salmon to the Columbia River.

The flour in the grocery store may be traced to Minneapolis and the wheat-fields of the Northwest. Salt comes from New York and Michigan, sugar from Louisiana, Hawaii, and Cuba. Meats from the corn regions of the middle West, from Kansas City, Chicago, etc. Fine building-stone is obtained from Indiana, Tennessee, Vermont, Massachusetts, etc.

Coffee may be traced to Brazil, tea to China and Japan, fine chinases to France and Germany.

Gold and silver are referred to the mines of Colorado and California, hard coal to Pennsylvania, coal-oil to Pennsylvania, Texas, and California. In locating

the sources from which these products come it is hardly advisable to enter into any full treatment of the modes of production. This full descriptive treatment will be given in the following years. The location of such regions is easily and quickly made upon large wall maps or by blackboard sketches. It is merely incidental to the treatment of home topics.

#### 6. Local map-making.

Beginning with the schoolhouse and grounds, make a simple map of the town and neighborhood with two or three streets and a few roads leading into the country. The creek or river is included and the railroads to neighboring towns. Use sand maps also to express surface irregularities, and let the points of the compass be taught incidentally. After a little practice the maps can be drawn to a scale.

#### 7. Primitive peoples and occupations.

America supplies three good types of primitive life,—the Eskimo of the North, their houses, hunting, and modes of life; the Indians as described by Parkman, Starr, and other travellers; and the Zuni Indians of the Southwest and of Mexico.

The "Seven Little Sisters" and "Each and All" furnish simple descriptions of life in the chief regions of the world for third-grade children getting their first notions of distant peoples and countries. They can be read by the teacher, discussed, and as far as possible illustrated by pictures, cardboard, and other constructions.

## SPECIAL METHOD IN GEOGRAPHY

### 8. Study of the world-whole.

The largest globes available should be used. Children enjoy thinking of the earth as a large globe, and finding the continents and oceans. The location of all the chief countries with reference to North America and the home, and the familiarity with the cardinal directions, may be accomplished in a few lively oral lessons.

### 9. Related topics in history.

Local history, grandfather stories, family histories, leading men and families. The early pioneers and settlers. Their houses. Regions from which they came and modes of travel at that time. Early roads. Indian stories and traditions of the surrounding country. Improvements, such as roads, bridges, schoolhouses, railroads, etc. Historical relics, public buildings, monuments, museums. Places of historic interest. Historical celebrations, Decoration Day, Thanksgiving, etc.

### 10. Closely related science topics.

Garden vegetables, grasses, and grains. Hot-house plants, forest trees. Fruit trees, budding and grafting. Tree-planting. The changes of the seasons. Plant and animal life in ponds and creeks. Various soils, sands, rocks, and their uses. Quarries and stratified rock. The water-supply, and pure water, wells, springs. Domestic animals and their uses.

FOURTH GRADE. — HOME GEOGRAPHY (*Continued*)

## 1. Local physiography.

Excursions for the examination of landscapes, hills, valleys, streams, and tributaries. Water action upon soils, rocks, and valleys. Soils upon uplands and lowlands and effects upon vegetation. Rich bottom-lands. Modes of fertilizing fields, rotation of crops. Rock strata along streams and valley slopes. Deposits of sand gravel and glacial drift. Note the influence of valleys and hills upon the location of towns, bridges, course of railroads, wagon roads. General views from commanding points on hills or bluffs or high buildings over town and country. Climate and seasons, seasonal changes. Effects of rain-storms and floods. Spring freshets. Snow-storms and ice. Winds. Movements of the sun and moon and the varying length of day and night. The effect of changing seasons upon the occupations of men.

## 2. Local commerce.

The town as a local trade centre. Roads leading into the country. Products of farms, gardens, and forests brought into town. Railroads, freight offices, and shipment of goods. Local factories and their shipments. Goods retailed to town and country people. A small town is the best illustration for children of a trade centre. A county-seat is usually the best example of a trade centre for all the roads of the county.

### 3. Local government.

The town council and how chosen. The mayor and his duties. Town ordinances in regard to police, roads, and bridges, gas or electric lighting, licenses, fire-department, etc. Local magistrates' and justices' courts. Local taxation and the uses to which it is put. The court-house, county court, and trials. Judges and juries. County records in court-house. In the home geography, government should deal with well-known people and objects which illustrate the facts of law-making, taxes, election, office-holding, and other duties of magistrates. In other words it should be very concrete and illustrative.

### 4. Large manufacturing plants.

Visits to shoe-factories, planing-mills, railroad shops, foundries, grist-mills, furniture factories, printing-offices, waterworks, cotton or woollen mills, carriage factories, canneries for fruit or vegetables, wholesale houses, tile-works, and potteries, ship-yards, dairies, sugar-factories, etc.

These more complex forms of industrial life are better visited in the fourth grade than in the third, and some of them belong in still later years. There should be a discussion in the class after each excursion, with such drawings and pictures as are necessary.

### 5. A few leading topics of the home state.

This is the first step in the outward movement from the home. The more striking and less difficult topics

call for a very complete description. In New York State, for example, the following may serve. The Hudson River, the Adirondack Mountains, the Erie Canal, fruit-growing (apples and grapes), dairying, Lake Ontario. In the state of Illinois (treated as the home), the list of topics may be as follows: the Illinois River, the prairies, the corn-fields, the Illinois and Michigan Canal (also the Drainage Canal).

The map of the state will be used freely and sketched often in outline on the board.

6. The relief map of North America.

A sand map representing the chief plains and highlands of North America. It can be made by the teacher while describing the continent in its main features. The treatment should be brief and simple, and the ideas gained will help to interpret the flat maps.

7. Large, descriptive topics of North America.

A few such bold topics capable of picturesque portraiture may give correct primary notions of mountains, river valleys, coast scenery, forests, lakes, cities, plains, etc. Large pictures and bird's-eye views, panoramic surveys, and landscapes may be secured. Photographs and stereoscopic views of notable scenery are not difficult to secure, and the geographies contain many suitable pictures.

Topics: scenes and descriptions along the Atlantic coast from Labrador to Florida, — capes and headlands, fishing-fleets, beaches, and bathing resorts,

light-houses, harbors, and cities, islands, rocky coasts, bays, and river mouths. A steamboat trip down the Mississippi River from the Northern lakes to the delta, with pictures. Scenes from the Appalachian Highlands. Cattle-ranches in the plains and foot-hills. The Yellowstone Park and other parks and scenes of the Rocky Mountains. A summer among the woods and mountains of Maine. A winter in Florida. The plateau of Mexico.

8. Journeys round the world.

A trip around the world on the parallel of the home. This forms an interesting base-line, on each side of which cities and countries can be ranged, and a helpful comparison of diverse countries be made.

A trip around the world on a meridian. This brings out all the contrasts of climate, the similarity of Northern and Southern hemispheres and the differences.

Steamboat voyage around the world. This is a means of discovering the position of different continents and oceans and some of the peculiar things of ocean navigation. These three excursions may serve to give the children a more definite idea of the geography of the world-whole. Pictures should be freely used.

9. Geography topics suggested by "American History Stories."

After completing a history story, a lesson may well be given, surveying more fully the geographical

conditions involved in the story. For example, after completing Champlain's voyages and explorations a careful survey of the geography of the whole, the St. Lawrence, Nova Scotia, Lake Champlain, the Ottawa River, the homes of the Iroquois and Hurons, the Atlantic Ocean and France, will greatly strengthen both the geography and the history.

Other stories for a similar historical review are Hudson's voyages and explorations, the Pilgrims and the voyage across the Atlantic, Captain John Smith and his exploring trips, Boone and the passes of the Alleghanies, Raleigh's expeditions, Washington's early life.

10. Geographical surveys suggested by European history stories and the Bible stories.

The stories of Abraham, Joseph, and David. Early Italian stories of Rome. Julius Cæsar in Gaul and England. King Alfred and the Danes. The Angles and Saxons.

In all these early history stories of Europe, a distinct emphasis should be placed upon the geography. The transfer of this careful survey to the geography proper will insure a definite comprehension of the geographical situations. In all cases maps and blackboard sketches should be freely used. Pictures and sand maps, and all the means of concrete illustration are needed to insure clear and correct notions.



## FIFTH GRADE

*Simpler Type Studies of the United States*

This includes topics of a pronounced physical character, the chief raw productions in agriculture, mining, and forestry, a few cities as trade centres, and the state government. The more complicated topics of manufacturing and commerce of the United States and the more complete survey of the physiography of North America can be reserved for the sixth grade. In each part of the United States the topics can be arranged in such order as best suits the movement from the home state outward.

## 1. Mount Washington and the White Mountains.

This region as a summer resort. Journey to the top. Views. The Presidential Range. The lakes and streams. Neighboring resorts and points of interest. Comparison with the Adirondacks.

## 2. Niagara Falls.

Lay of the land between Lake Erie and Lake Ontario. Map and description of the falls. Pictures. The gorge, rapids, and whirlpool. Recession of the falls. Obstruction of commerce by the falls. Canals. Use of the water-power.

## 3. The Alleghany Mountains.

Rivers that break through the mountains. Passes. Delaware, Susquehanna, Potomac, James. Scenery of mountains, river cuts, railroads, etc. Forests, lum-

bering. Water-power. Mining. Chief mountain peaks. Mineral springs and resorts.

4. The Hoosac Tunnel.

Expense and difficulties of construction. The mountain ridge of the Berkshire Hills. Importance of the tunnel to Boston and Massachusetts. Later comparison with tunnels in the Alleghanies.

5. The oyster fisheries.

Oyster-farms in Long Island Sound and in the Chesapeake Bay. The process of growing and gathering oysters. Oyster boats and fishermen. Packing and shipping of oysters. Other oyster-beds along the Atlantic coast.

6. Location and description of a coal mine.

Sinking the shaft, difficulties and expense. The ventilation of a coal mine. Necessity for it. The dangers in mining, caving in, floods, explosions, fires. The coal-breaker, in the hard-coal regions. Machinery for hoisting, pumping, etc. Location and extent of coal fields in Pennsylvania. Other coal fields in the United States. Relation of coal production to manufacturing, commerce, and domestic use. Cities as centres of coal shipment and use, as Pittsburg, Chicago, Erie, Philadelphia, St. Louis, New York. Shipment by water and by rail.

7. The iron mines of Michigan.

Location and description of iron mines. Great ore docks and loading of ships. Transportation to Chi-

cago, Detroit, Cleveland, Buffalo, etc. Relation of iron mines to coal mines.

8. The blast-furnace.

Structure of the furnace. Coke, lime, and ore. Heating and smelting. Drawing of the molten metal, pig-iron. Uses of pig-iron in iron manufacture for railroad iron, stoves, and furnaces, wire-mills, bridges, guns, etc. Location of blast-furnaces at Pittsburg, Cleveland, Chicago, Birmingham, Buffalo, etc.

9. Pittsburg as a trade centre.

Advantages for iron manufacture. Neighboring manufacturing towns. Coke-ovens. Oil-refining and glass-making. Advantages of river for coal and iron shipment, etc. Railroad centre.

10. Lake Superior.

Location, area, and depth of the lake. Tributary rivers and the area drained. Scenery on the lake-shores. Cliffs, woods, islands. Cities and harbors. Marquette, Duluth, etc. Commerce and shipping of the lake. Storms, fogs, and winter upon the lake. Dangers of navigation, season of navigation. Falls of St. Marys and locks. Steamers and whale-backs. Comparison of Lake Superior with other great lakes in size, depth, climate, commerce, cities.

11. Tobacco-raising in Virginia and Kentucky.

Steps in the cultivation of the crop. Soil and effects of tobacco culture on the soil. Louisville as a centre for the tobacco trade. Tobacco production in

other states and in Cuba. History of tobacco-raising in the United States.

12. Cotton plantations in the South.

Raising and picking of cotton. Negro labor. The cotton-gin, baling. History. Shipment of cotton by rail and by steamboat to New England and to Europe. Cotton-seed and cotton-seed oil. Locate the cotton belt by states. Cotton mills in the South.

13. Hardwood forests of the Ohio Valley.

The original forests of this region. Labor of the pioneers in clearing the forests. Game. Hardships. Log houses. Bad roads. Present forests of Ohio, Indiana, Kentucky, West Virginia, and Tennessee. Lumber business, sawmills. Kinds of lumber. Effects of the destruction of the forests.

14. The pineries and lumbering on the upper Mississippi.

Logging-camp in winter. Uses of the snow. Skidding, and log piles on the banks of streams. Melting snows and rafting of the spring. Sawmills and planing-mills. Forest fires and great losses. Forest belt from Maine to Minnesota. Series of great lumber ports, Minneapolis, Chicago, Detroit, Buffalo, Albany, Bangor, St. John, etc.

15. Minneapolis as a trade centre.

Advantages of position and water-power. A centre for the lumber business. Mills. Railroad to the prairie regions westward. Wheat-fields of the Northwest. Red River Valley. Flour-mills of Minneapolis.

Shipment of flour. Minneapolis and St. Paul compared with Pittsburg and Allegheny. Other lumber and flour centres of the upper Mississippi. Places of special interest about Minneapolis.

16. Stock-raising in the corn-producing states.

Pasturing of cattle. Winter feeding. Shipment to the packing centres. Kansas City, Chicago, Omaha, Peoria.

17. Trip down the Mississippi River from St. Paul to the delta.

Bluffs on the upper river. Lake Pepin. Cities. St. Louis and the great bridge. Broad flood plain below Cairo. River-windings. Levees. Floods, crevasse, damage. Steamboats, pilots, changing channels. Cities of Memphis, Vicksburg, New Orleans. Description of the jetties at the mouth of the Mississippi. Recent geological history of the valley. Commerce of the Mississippi River and its tributaries. Ohio and Missouri rivers compared with one another and with the upper Mississippi.

18. The government of the home state.

State capitol. Governor's residence. State legislature. Rooms for meeting of Senate and House. Illustrations of state laws. State appropriations for schools and charitable institutions. Duties of the Governor, illustrated. The state Supreme Court and its duties.

19. Pikes Peak and vicinity.

Manitou and the mineral springs at the base. Trip

to the summit house by trail or by railroad. Broad view from the summit. Clouds, rain, snow, and storms on the top. Places of interest in the neighborhood, as Cheyenne Canyon, Garden of the Gods, Monument Park, Williams Canyon, Cave of the Winds. Other great peaks in Colorado, as Grays Peak, Longs Peak, Mount of the Holy Cross, etc. Compare with Mount Washington and White Mountains.

20. Irrigation and the big ditch at Denver.

The arid country east of the foot-hills. The Platte River and location of the big ditch. Construction of the ditch, tunnels, flumes, etc. Reservoirs for receiving spring floods. Drawing off the water upon the land. Water rights and taxes. State laws. Effects of irrigation. Farms, gardens. Other modes of irrigation. Importance of irrigation to Colorado and the West.

21. Gold-mining in California.

Discovery of gold in California. History. Placer-mining. Going down into a gold mine. Machinery. Stamp-mills and smelters. Gold production in Colorado and other Western states. The uses of gold at the mint and in manufacturing. Later comparisons with the Klondike, Australia, and South Africa.

22. The central basin.

General survey and drainage of this region. Salt Lake. Rivers flowing into it. Geologic history of the lake. Salt deserts to the west. Other salt lakes and sinks in the great basin. Causes of the dry

climate. Vegetation of the basin. The surrounding mountains.

23. Fruit-growing in California and Florida.

Orange groves. Pineapples, peaches, etc. Dangers from frosts and means of protection. Shipment to Northern and Eastern markets. Comparison with other fruit-growing districts of the United States. The winter resorts in these states.

24. Columbia River and the salmon fisheries.

The salmon going up the river. Catching and canning the fish. Mouth of the Columbia. Navigation. The falls, dalles, and upper course of the river.

25. The forests of Washington and the Pacific slope.

Lumbering among the big trees. Climatic conditions favorable to forests. Shipment of lumber. Comparison with lumbering in other parts of the United States.

26. Sugar-production in Louisiana.

Sugar-cane and the cane-fields. Sugar-mill and boiling down the sap. Refining sugar and shipment. Compare with maple-sugar making. Later comparison with Cuba and Hawaii in regard to sugar product.

*Geography Topics Parallel with the History Lessons  
of the Fifth Grade*

Journeys across the Rocky Mountains. (Stories of Frémont and Lewis and Clark.) The canyon of the Colorado River. (Story of Major Powell.) The pla-

teau of Colorado. The land of Mexico. (Story of Cortés.) Florida and the Southern states. (De Soto and La Salle.) The West Indies. (Columbus's different voyages.) The trade routes to India. (Columbus and De Gama.) The map of the world in Columbus's day. The equatorial current, trade-winds, and Gulf Stream. (Voyages of early navigators.)

As pure geography lessons parallel with the history these topics can be treated briefly but in a comprehensive way, so as to establish a valuable connection between history and geography.

*Geography Topics for Short Review as suggested by  
the Stories of European History*

Spain in the time of Columbus. (Granada and the Moors.) The coast of Africa and the Indian Ocean. (Prince Henry and the Portuguese navigators.) The journey to Palestine. (Richard I and the Crusades.) Normandy and England. (William I.) Sailing around England. (Spanish Armada.) Scenery of the mountains and rocky coasts of Scotland. (Wallace and Bruce.)

A review of these historical topics from a purely geographical standpoint is worthy of special emphasis.

SIXTH GRADE

The sixth grade completes the geography of the United States and North America. The more complex and difficult topics of the United States are given a full treatment. The large physiographic



aspects of North America, our neighbors in Canada and Mexico, our colonial possessions, and the still broader topics of mathematical geography for the world are included in this year's work.

1. Boston. (Historical associations, commerce.)

Monuments. History. Famous streets and buildings. Harbor and shipping. Import of raw products. Manufactures, shoes, books, clothing, etc. Coast trade and ship lines to Europe. Railroads to the West and North. Harvard University. Comparison with Baltimore, in commerce, population. Johns Hopkins University. Coast trade. Railroads.

2. New York City.

Commerce with the West via Hudson River, New York Central, Erie Canal, and Great Lakes. Other Western roads terminating in New York. The harbor and shipping-docks of New York. The coastwise trade. Steamship lines to Europe and South America. Exports and imports compared with other cities of the United States, reasons for vast amount. Immigration, Castle Garden, emigrant ships. Various languages spoken in New York. Jewish quarter. Great bridges, ferries, parks, libraries, beaches. Greater New York and the suburban cities. Columbia University and other schools. The subway and elevated railways. Comparison in detail with Philadelphia. Later comparison with New Orleans, Chicago, and San Francisco.

### 3. Great Traffic Routes across the Alleghany Mountains.

The Baltimore and Ohio Railroad, the Pennsylvania lines, the New York Central, tunnels, through the mountains, scenery. Use of the river valleys and water-gaps. The Great Valley of Virginia, history. Early difficulties in crossing the mountains. Later comparison with Rocky Mountain roads.

### 4. Development of the Southern states.

The pine forests of the South, turpentine and lumbering. Iron production and coal mines. Birmingham. Truck-farming along the Atlantic states from North Carolina to Florida. Cotton-mills and factories. Fruit culture in the Gulf states. Oil-fields, cotton production, and cattle-ranches of Texas. Galveston and its trade. The negro population and labor. The schools at Hampton and Muskegee. The public schools and universities of the South. Immigration into the Southern states.

### 5. The manufacture of steel and wrought-iron.

Their uses in machine-shops, in the manufacture of guns and firearms, cutlery, nails and wire, tools and implements, in bridges, ship-building, and house construction. The importance of iron industries and their close relation to all other industries in our modern age should be understood.

### 6. Cotton manufacture in New England.

Mills at Lowell and Fall River and other cities. Use of water-power and steam. The spinning-jenny

and the power-loom. Mill operatives, and their homes and mode of life. Cotton-mills in the South and in other states. Woollen-mills and woollen manufacture. Study a map which marks the distribution of textile industries in the United States.

7. A great newspaper plant.

Gathering the news. Reporters. Press reports. Paper used. Typesetters and printing-presses. Extent of circulation. Various kinds of news from home and abroad. Printing and manufacture of books. Large libraries in cities and schools. Chief centres of publication, Boston, New York, Chicago, etc.

8. Boot and shoe manufacture.

Hides, tanneries, and leather manufacture. Sources from which hides and leather are obtained. A shoe-factory, machines and division of labor. Boston as a centre for the shoe trade. Other cities.

9. Ship-building.

Wooden and iron ships. Iron ship-building in Philadelphia. The government navy-yards. Dry-docks, launching a ship. The American Navy, vessels of war. Lines of merchant steamers to Europe.

10. Washington as the seat of government.

General plan of the city. History of founding. The Capitol building, halls of Senate and House. Congress and its law-making powers. The Supreme Court and its duties and powers. Comparison of state and national government. Monuments and parks and

other public buildings in Washington, as the Congressional Library, Smithsonian Institute, White House, Treasury Building, and Department of State. Relation between the three departments of government.

11. Chicago as a trade centre.

Advantage of location. Relation to the West. Original site. Swamps and Chicago River. Products centring here, grain, livestock, lumber, coal, iron, copper etc. ; packing-houses. Railroads centring in Chicago. Shipping by the lake and by canal. Water-works, drainage canal. Park system. History of Chicago, great fire, exposition. Compare later with other cities in size, etc.

12. Central Pacific Railroad Route from New York to San Francisco.

Difficulties of construction. Mountain-engineering. Tunnels and snow sheds. Old wagon roads and trails to California. Products shipped between the East and the West. Fruits, metals, manufactures, tea, sugar, etc. Comparisons with Southern Pacific and Northern Pacific. Compare with Pennsylvania system in the East. The railroads of the United States as a whole.

13. The Mississippi Valley as a whole.

Area and population. Variety of climate and products. Great producing districts as corn belt, wheat, cotton, iron, coal, cattle-raising, forests. Contrast of the Ohio and Missouri rivers. Commerce of river compared with that of railroads. Commerce of Mississippi River compared with that of the Great Lakes.

## 14. New Orleans.

Centre for the cotton trade. Commerce by river boats and ocean steamers. The levees, wharves, and river front. Products shipped, sugar, fruits, cotton, lumber, grain. Population, French, English, negroes. History. Railroad centre for the South. Comparison with Galveston and Gulf ports. Trade with Central and South America and with Europe. Value of the jetties at the delta.

## 15. The Rocky Mountains as a whole, including all the Western highlands of North America.

Chief ranges and plateaus. Parks. Effects of the mountains on climate, rains, and production. Mineral and agricultural resources. Grazing and forests. Drainage, rivers, gorges and canyons, lakes. Volcanic regions, glaciers, deserts. Plateau of Mexico and volcanoes.

## 16. Trip from Puget Sound to Alaska.

Islands and coast scenery. Climate of the coast. The Japan Current. The people and industries of Alaska. The seal fisheries. Climate of Alaska and the North.

## 17. San Francisco.

Harbor and advantages for trade. Commerce of the Pacific coast and with Asia. Steamship lines to China and Japan. Exports and imports at San Francisco. Chinese immigration. Chinese quarter. Commerce with Hawaii and the Philippines. San Francisco compared with cities of Puget Sound and

other Pacific ports. San Francisco compared with New York, Boston, Baltimore.

#### 18. The Isthmian Canal.

The French attempt to build the canal. The Nicaragua Route, length and difficulties. Present plans of our government at Panama. Advantages of an Isthmian canal. Shortening of great trade routes by water. Comparison with Suez Canal.

#### 19. North America as a whole.

Its great central plains and mountain systems. Its Atlantic and Pacific coastal plains. Contrast of the Gulf coast with the Arctic coast. The chief zones of climate, variations in heat and moisture due to physical causes. Isothermal lines. Peninsulas, bays, and harbors of North America. Comparison of Atlantic and Pacific coasts.

#### 20. Distribution of races in North America.

European races in North America. The Indians in Canada, United States, and Mexico. The negroes, their numbers and location. The Chinese and Japanese. European races in the United States. Density of population in different parts of North America. Comparison and contrasts of these races.

#### 21. The glacial period in North America.

Description of the great ice sheet. Extent and limits of the ice sheet. Its deposits and effects on soil, lakes, rivers, etc. Proofs of the ice age upon the rocks. Present glaciers in Greenland and Rocky Mountains.

## 22. Mathematical geography.

Motions of the earth on its axis and around the sun. The inclination of the earth's axis to the plane of its orbit. Causes of the changing seasons and the changing length of the day and night. Long days in summer and long nights in winter above the Arctic Circle. The equinoxes. Latitude and longitude; parallels and meridians and their meaning interpreted upon maps; equator and prime meridian. Comparison of parallels of latitude with isothermal lines. The zones. The moon and its changes, effects upon the tides, importance of tides in harbors and navigation. Stars and constellations of the Northern Hemisphere, apparent motion.

## 23. Colonial topics.

The Hawaiian Islands, products, climate, people, and government. The Philippines. History. Surface and climatic conditions. Products and commercial importance. The people, native Philippinoes, Spaniards. The government of the Philippines, education. The United States and trade with the Philippines. Porto Rico and Cuba. History.

## 24. Our neighbors in North America.

The government of Canada. Ottawa the capital city, parliament, states. Comparison with government of the United States. Trade relations with the United States. The St. Lawrence River, commerce, rapids, cities. Contrast with the Lower Mississippi and Colorado rivers.

25. Mexico. Its people and government.

The Mexican population, Indian races. History, conquest by Spaniards, independence. Backward condition of agriculture, manufacturing, and education. Ignorance and half-enslaved condition of the poorer classes. Comparison with people of United States. The states of Central America.

26. Topics suggested by American history.

The St. Lawrence Valley and the French wars. The Ohio Valley and its approaches from the east. Geographical location and distribution of Indian tribes in our early history. The influence of the Alleghany Mountains upon early settlement. The geographical distribution of different nationalities coming to this country in colonial times.

27. Geography topics suggested by European history.

Location of European countries which colonized America. Compare the latitude of their old home with their situation in America. The old home of the negro race in Africa. The Mediterranean Sea and its surrounding nations. (Suggested by the Persian and Punic wars.) New England and Canada. (Suggested by the colonial and border wars.)

SEVENTH GRADE.—THE PHYSIOGRAPHY OF EUROPE

1. The Central Alps. Source of rivers. The Great Plains of Europe. Effects of the glacial period in Europe and comparison with America. Influence of



the Gulf Stream and of the ocean upon the climate of Western Europe. The lesser mountains and peninsulas of Europe and the division into separate nations. The surrounding waters and irregular coastline of Europe. Effects in history. 2. Physical character and surroundings of the British Isles. Effects of isolation. 3. Voyage by steamer from New York to London. South coast of England, the Thames, Liverpool, and the trade with America. 4. The coal fields of England and Scotland. Importance of coal. Compare with United States. 5. Iron manufactures. (Birmingham and Sheffield.) Compare with Pittsburg, Birmingham, Chicago. 6. The textile industries. (Manchester.) Compare with New England cotton and woollen mills. The Manchester ship canal. 7. London. Parliament houses, government, King and aristocracy. Compare with Washington. British Museum. Westminster Abbey. St. Paul's. The docks and shipping. (Greater New York.) The Tower. History. 8. Oxford and Cambridge universities. Great public schools, school life. 9. The surface of Scotland, lakes, coast, mountains. 10. Glasgow and ship-building. 11. Edinburgh and the Castle. History. 12. Ireland's agriculture and manufactures. The Irish people, the Irish in America. 13. Important fisheries about the British Isles. Compare with the Banks of Newfoundland and New England coast, Chesapeake Bay, and Florida coast.

*France*

14. Paris the city of modern art, palaces, architecture, churches, art galleries, theatres. 15. The manufacture of silk, and Lyons. 16. Grape culture and French wines. Bordeaux. 17. Marseilles, the chief port, trade with Mediterranean ports. 18. The French people, gayety, fashion, fine china, and artistic manufactures. The French Republic. Recent history.

*Germany*

19. The Rhine River, fortified cities. Steamboat trip up the Rhine, commerce and cities of the Rhine. History. Compare with the Hudson. 20. Iron manufactures on the lower Rhine. 21. Sugar-beet industry. History. 22. Berlin the Kaiser City, the Kaiser, the army, royal residence, museums. Railroad centre. Compare with Chicago. 23. Character of the German people, music, outdoor life, physical training. Common schools and higher education. Beer-gardens and amusements. Home life. 24. Internal commerce by rivers and canals. 25. Hamburg the chief seaport, the harbor. Other cities of the Baltic.

*Holland and the Lowlands*

26. History. Character of the Dutch people.

*The Austrian Empire*

27. Mixed nationality. Hungary. Vienna the capital city.

28. Lakes, mountains, and rivers of Switzerland. Swiss manufacturing and grazing. Dairy products. Government of Switzerland. History. Compare with our union of states.

*Norway, Sweden, and Russia*

29. Surface and products. Emigration to America.

30. The government of Russia. Contrast with the United States and England. St. Petersburg and the commerce of the Baltic. (Peter the Great.)

31. The ancient city of Moscow. The kremlin.

32. The Volga and the great plain of Russia. Compare with Mississippi Valley. Odessa.

*The Peninsulas of Southern Europe*

33. Madrid and the Spanish people. 34. Granada and the Alhambra. (Irving.) 35. Italy and the Italian people. Fine art and beggars. Naples and Mount Vesuvius. (Pompeii.) 36. Rome, St. Peter's and the Vatican, the Head of the Roman Church. The Colosseum and the ruins of Rome. (Historical associations.) 37. Athens and the Acropolis. The modern city. (Independence from the Turks.) 38. Constantinople. Bad government of the Turk. Decline of Turkey.

39. Great traffic routes of Europe by railroad, by internal waterways, and by sea travel.

Location of chief cities with reasons for the same. Contrast with American cities.

40. Number of important nationalities in Europe. Contrast with North America.

41. Comparison of Europe with North America as to mountains, rivers, cities, climate.

*Topics suggested by American History*

Geographical centres of the Revolutionary War in America. (Hudson River and Lake Champlain, Boston and vicinity, New York and New Jersey, Virginia and the Carolinas.) Important naval battles on the ocean. Franklin and Paul Jones in Paris. France, England, Holland, and Germany during the Revolution.

*European History and Geography*

Geographical division of Europe into Protestants and Catholics. The empire of Charles V in Spain, Holland, Austria, and the Colonies.

EIGHTH GRADE

*Study of the Rest of the World, starting from Europe as a Centre of Influence.*

The British Empire.

Colonial possessions and their distribution. 1. India, physical features, climate, and people. England's government of India. History. 2. Routes to India from England, by Cape of Good Hope, by Suez Canal, by overland railway. 3. Australia and its rapid development. Gold mines. Sheep farms. Cities. Trade with England. Union of states. Compare with Canada

and the United States. 4. The English in Africa. Cape Colony. The Boer War. Egypt. Livingstone and Stanley. Possessions of other European states in Africa. Rivalry of France and England in Africa. 5. The Congo Free State. Congo River. (Stanley.) 6. New Zealand and the English possessions in the Pacific. 7. Other lesser colonies of England. 8. General relations of England to all her colonies. Commerce of England. Naval power of England, war-ships and naval stations.

9. Dutch possessions in the East Indies.

Java and the successful Dutch rule.

10. Russia in Asia.

Russian exiles. The Trans-Siberian Railway. Rivalry of Russia and England in Asia. The Black and Caspian seas. Commerce. Cities. 11. The great physical features of Asia, mountains, plains, and climatic conditions. 12. Vast deserts of Central Asia. Compare with deserts of Northern Africa.

13. The Chinese Empire. Its weakness. The Boxer troubles and European interference. 14. The Yangtse River, primitive boating on this river. Compare with Mississippi River. 15. Chinese cities, Peking, Canton, etc. Commerce with United States and with Europe. 16. Tea culture in China. 17. Character of the Chinese people, slow and conservative, opposition to modern ideas and improvements, ancestor worship. Skill in hand-work. Manufactures. Education and power of old customs.

18. The Island Empire of Japan.

Comparison with the British Isles. Progressive character of the Japanese. Their artistic manufactures. Education. Army. Navy. Recent history.

19. Smaller states of Asia. The Open Door of Asia. 20. The physiography of Asia compared with that of Europe and North America. 21. Large islands of the East Indies and the West Indies and Madagascar compared. 22. Distribution of races in Asia. Compare with Europe in population and government.

23. South America.

The Andes Mountains. Compare with North America. 24. The Amazon River. Compare with Congo and Mississippi. 25. Brazil and its people. Coffee production. Rio Janeiro and other cities. 26. Important states of South America. 27. The Pacific Ocean, size and character as compared with the Atlantic and Indian.

28. Comparative physiography of the continents.

29. Location and distribution of races upon the earth. 30. The controlling influence of Europe and North America.

*Topics suggested by American History*

31. The expansion of the United States. Results of the Spanish War. 32. The Negro in Africa and in America. 33. Distribution of English-speaking people throughout the world.

34. European history.

Napoleon's conquests in Europe. 35. The union of German states. 36. The union of Italian states. 37. England's conquests in the last century.

## CHAPTER XII

### LIST OF BOOKS CAREFULLY ARRANGED ACCORDING TO GRADES

THE following list of books has been selected for the aid of teachers in carrying out the above course of study.

In each grade the books are divided into three groups (except in third grade).

1. The text-books which constitute the basis of the school work and are of use to both teacher and pupils. The standard text-books can be used in this place.

2. The reference books which are suitable for the children, such as geographical readers, books of travel, closely related books in history and science. These books are useful in the school library, and should be such as the children can consult independently and under the direction of the teacher. They cover a wider range of topics and give much detailed information not possible of incorporation into text-books. They are often well illustrated, and are written mostly in a simple and interesting style. They supplement effectively the work of the text-books, and give, also,



an outlet for the activity of the abler pupils in their leisure time.

3. Additional reference books for teachers. The larger books, dealing more exhaustively with important phases of geography, geology, and history should be, as far as possible, within the teacher's reach. Such books are beyond the capacity of children, but they greatly enlarge and stimulate the teacher and also furnish an abundant store of ideas and illustrative facts with which to enrich the work of the recitation.

Pedagogical books dealing with geography and related subjects are included, and some of the larger scientific books and great works on geography and science are incorporated into this list. The school library, as far as possible, should be supplied with a full series of all these works.

### THIRD GRADE

#### 1. Texts for the immediate use of the teacher.

The Home Geography, First Book. (Tarr and McMurry). The Macmillan Co. The topics on home geography and elementary physiography are well worked out.

Other standard school geographies.

Lessons in Home Geography (McMurry). The Macmillan Co. A series of illustrative lessons and excursions into the home district fully described.

Lalami, the Little Cliff-dweller (Bayliss). The Public School Publishing Co.

The Seven Little Sisters (Andrews). Ginn & Co.

Each and All (Andrews). Ginn & Co. These two books have been much used in about third grade as an introduction to distant lands and peoples. Simple descriptions of child life and surroundings.

The Wide World. Ginn & Co. 121 pp.

Geographical Nature Studies (Payne). American Book Co. 144 pp. Very simple.

Around the World, First Book (Carroll). The Morse Co. Suitable for children's reading.

Home Geography (Long). American Book Co. 142 pp. Very simple, with illustrations.

Little Lucy's Wonderful Globe. The Macmillan Co.

Big People and Little People of Other Lands (Shaw). American Book Co.

Story of Wretched Flea (Muller). A. Flanagan & Co. The story of a little Chinese boy.

Children of the Palm Lands (Allen). Educational Publishing Co.

Snow Baby (Peary). F. A. Stokes & Co. A true story of Arctic life illustrated with photographs.

Little People of Asia (Alice Thorne Miller). E. P. Dutton & Co.

2. Additional references for the teacher.

Teacher's Manual of Geography (McMurry). The Macmillan Co. This is designed to go with the Tarr

and McMurry geographies. Illustrative lessons are also given. Lessons in Chalk Modelling (Heffron). Educational Publishing Co.

The Practical Garden Book (Hume and Bailey). The Macmillan Co. 250 pp.

The Principles of Fruit-growing (King). The Macmillan Co. 479 pp.

The School Garden (Hemenway). Doubleday, Page & Co.

Outlines of Field Geology (Geike). The Macmillan Co.

The Story of the Earth (Seeley). D. Appleton & Co. 186 pp.

Brooks and Brook Basins (Frye). Ginn & Co.

The Story of Ab, A Tale of the Time of the Cave Men. Doubleday & McClure Co.

Man and his Work (Hubertson). Adam and Charles Black. Geography and industries.

Town Geology (Kingsley). The Macmillan Co. An interesting popular treatment of geological topics.

Woman's Share in Primitive Culture (Mason). D. Appleton & Co. Descriptive of early industries.

The Beginnings of Art (Grosse). D. Appleton & Co.

Anthropology (Tylor). D. Appleton & Co. Chapters on primitive dwellings and arts.

History of Education (Davidson). Scribners. Especially the chapter on primitive man.

## FOURTH GRADE

1. Text-books for direct use; as a guide to the teacher, furnishing a course of study and materials.

Home Geography (continued), First Book. (Tarr & McMurry). The Macmillan Co. This book contains a somewhat full treatment of important topics, and can be used in part by the children for seat study and map work.

Other standard school geographies.

Lessons in Home Geography (McMurry). The Macmillan Co. In this, numerous excursions are described as taken with classes of children. Illustrative lessons of home geography are also drawn from different parts of the country.

In the above books is given also a treatment of the world-whole for third and fourth grades.

2. Supplementary books for children's reading and reference. Books for children's reading in this grade must be very simple in language.

Around the World, Second Book (Carroll). The Morse Co. Very good.

Selections from the Youth's Companion, Numbers 10, 11, 12, 13, 14, 15, 16, 17. These are in cheap pamphlet form, well written and illustrated. Perry Mason & Co.

The Wide World. Ginn & Co.

Home Geography (Long). American Book Co.

Big People and Little People of Other Lands (Shaw). American Book Co.

Little Folks of Other Lands (Chaplin). Lothrop Publishing Co.

Little People of the Snow. A. Flanagan & Co.

3. Additional references for teachers.

Boys of Other Countries (Bayard Taylor). G. P. Putnam & Sons.

Lessons in the New Geography (Trotter). D. C. Heath & Co. 168 pp.

First Book in Geology (Shaler). D. C. Heath. 252 pp.

Popular Geology (Hogan). A. Lovell & Co. 93 pp.

The Geological Story (Dana). American Book Co. 292 pp.

Toward the Rising Sun. Ginn & Co.

Science Primers, Physical Geography. American Book Co. 110 pp.

Suggestions on Teaching Geography (McCormick). The Public School Publishing Co. A helpful book.

How to study and teach Geography (Parker). D. Appleton & Co.

#### FIFTH GRADE

1. Text-books for the use of teachers and pupils.

North America, Second Book (Tarr & McMurry). The Macmillan Co. This contains a full treatment of leading topics of North America and especially of the United States.

Type Studies of North America, Part I (McMurry). The Macmillan Co. This contains a full presentation of the chief types of the United States as supplementary to the text-book.

Other standard geographies.

Teacher's Manual (McMurry). A guide to teachers in the use of the Tarr & McMurry Geographies. The Macmillan Co.

The State Geographies. New England, New York, Ohio, and other States. Much fuller treatment of special topics. The Macmillan Co.

2. Supplementary and reference books for children.

Around the World, Third Book (Carroll). The Morse Co. Excellent reading for this grade.

Picturesque Geographical Readers, Books Second, Third, Fourth, and Fifth. Lee & Shepard.

The Information Readers, 4 vols. Boston School Supply Co. Descriptive of industries, etc.

Our Own Country. Silver, Burdett & Co.

Stories of Industry, 2 vols. Educational Publishing Co. These treat mining, textile industries, manufacture of iron, etc.

Selections from the Youth's Companion, Numbers 10 to 17. Perry Mason & Co.

Railway guides and illustrated pamphlets as follows: Wonderland, 1900, Northern Pacific Railway. Wonderland, 1901, Northern Pacific Railway. Colorado via the Burlington Route. Grand Canyon of Arizona, Santa Fé Railroad. California for Health, Pleasure, and Profit, Southern Pacific. Around the Circle, The Denver and Rio Grande. What to see in Colorado? Colorado Midland. Los Angeles City and County, Souvenir and Views, The Union

Pacific. Through Story Land to Sunset Seas, Southern Pacific.

Our Country, East. Perry Mason & Co.

Our Country, West. Perry Mason & Co.

World and its People (Smith). Silver, Burdett & Co.

3. Further references for teachers.

The Teaching of Geography (Geike). The Macmillan Co. An excellent practical treatise.

Historic Waterways (Thwaites). A. C. McClurg.

Journeys in boats on the Wisconsin, Fox, and Rock rivers.

General Guide to the United States and Canada, 2 vols. Appleton & Co. Good reference materials.

Historic Towns of the Middle states (Powell). G. P. Putnam & Sons. 426 pp. Illustrated.

The Earth and its Story (Heilprin). Silver, Burdett & Co.

Ballou. Footprints of Travel. Ginn & Co.

Picturesque Geographical Readers, Second and Third Books. Silver, Burdett & Co.

Dixie, or Southern Scenes and Sketches (Ralph). Harpers. Well illustrated.

Our Italy (Warner). Harpers. The Southwest. Well illustrated.

Life on the Mississippi (Mark Twain). Harpers.

The Story of our Continent (Shaler). Ginn & Co. One of the best books for the teacher's use.

Elementary Meteorology (Waldo). American Book Co.

Explorers and Travellers (Greely). Scribners. 373 pp. Illustrated.

Notable Voyages (Kingston). Routledge. 621 pp. Illustrated.

King's Methods and Aids in Geography. Lee & Shepard.

#### SIXTH GRADE

##### 1. Text-books for teachers and pupils.

North America, Second Book (Tarr & McMurry). Full study of physiography, products, manufactures, cities, etc., of the United States and North America. This is a continuation of fifth-grade work.

Type Studies of the United States and North America (McMurry). Part II. (In preparation.) The Macmillan Co. These are full accounts of the larger, more complex topics of North America.

Other standard geographies.

The State Geographies, by different authors. The Macmillan Co. New England, New York, Ohio and other States. Very interesting reference material and well illustrated.

##### 2. Supplementary reading and references for children.

North America (Carpenter). American Book Co. Valuable and interesting descriptions.

King's Geographical Readers, 6 vols. Lee & Shepard. Well illustrated and suited for school use.

Our American Neighbors. Silver, Burdett & Co. Descriptions of Canada and Mexico.



Great American Industries, 2 vols. A. Flanagan & Co. Illustrated descriptions of chief industries.

Whaling and Fishing (Nordhoff). Dodd, Mead & Co. A realistic description of ocean and sailor life.

Alice's Visit to the Hawaiian Islands (Krout). American Book Co. 208 pp. Simple descriptions and pictures based on observation.

Selections from the Youth's Companion, Numbers 3, 10, 11, and 12. Perry Mason & Co.

Boy Travellers (Knox). The volume on Mexico. Harpers.

Stories of Industry, 2 vols. Educational Publishing Co.

A Trip across the Continent (Lummis). Scribners.

A Reader of Physical Geography (Dodge). Longmans, Green & Co.

Historic Boston (Hale). D. Appleton & Co.

General Guide to the United States and Canada, 2 vols. D. Appleton & Co.

Arctic Alaska and Siberia or Eight Months with the Arctic Whalemens (Aldrich). Rand, McNally & Co.

Greater America. Perry Mason & Co. A study of our recent possessions.

Hawaii and its People (Twombly). Silver, Burdett & Co.

Winter in Central America and Mexico (Sanborn). Lee & Shepard.

Captains of Industry (Parton). Houghton, Mifflin & Co.

3. Additional references for teachers.

The Story of our Continent (Shaler). Ginn & Co.  
Aspects of the Earth (Shaler). Scribners. A large book, superior illustrations.

Lakes of North America (Russell). Ginn & Co.

Handbook of Commercial Geography (Chisholm). Longmans, Green & Co. 490 pp. Good reference.  
South and West (Warner). Harpers.

Commercial Geography (Tilden). Sibley & Ducker. A brief treatment of commercial topics, with good maps.

Economic Geology of the United States (Tarr). The Macmillan Co. Very instructive.

Introduction to Physical Geography (Gilbert and Brigham). D. Appleton & Co.

Geographic Influences in American History (Brigham). Ginn & Co. Very instructive.

Nature and Man in America (Shaler). Scribners. 285 pp. Very instructive and helpful to a teacher.

Railway guides, similar to those noted in fifth grades.

Our Great West (Ralph). Harpers.

Natural Resources of the United States (Patten) of the Science Primer Series. There is also a large volume on the same subject by Patten. American Book Co.

The Soil (King). The Macmillan Co.

Teacher's Manual of Geography (Redway). D. C. Heath & Co. Valuable.

King's Methods and Aids in Geography. Lee & Shepard.

National Geographic Monographs (ten large pamphlets on physiographic topics). Those on Niagara Falls and Mt. Shasta are especially good. The American Book Co.

Commercial Geography (Adams). D. Appleton & Co. 477 pp. Very valuable for reference.

Practical Agriculture (James). D. Appleton & Co.

The United States. Facts and figures illustrating the physical geography of the country and its material resources (Whitney). Little, Brown & Co.

Highways of Commerce (Special Consular Reports), Vol. XII. Ocean lines, railways, canals, and other trade routes of foreign countries. A government report of great value, with full descriptions.

Industrial Evolution of the United States (C. D. Wright). Scribners.

The Oregon Trail (Parkman). Little, Brown & Co. An account of Parkman's experiences among Indians and hunters on the Western plains.

The First Crossing of Greenland (Nansen). Longmans, Green & Co.

Glimpses of Three Coasts (Jackson). 418 pp. Little, Brown & Co.

The Yellowstone National Park (Chittenden). 395 pp. The Robert Clarke Co. Illustrated.

Rivers of North America (Russell). Putnam. 320 pp.

Appleton's Guide to Mexico. D. Appleton & Co.

North America (Lyde). Adam and Charles Black. Treated from an English standpoint. 113 pp.

Appleton's Canadian Guide-book.

Glaciers of North America (Russell). Ginn & Co.

Stoddard's Lectures, Vol. X. Full, illustrated descriptions of the Grand Canyon, Yellowstone Park, and California. Balch Brothers Co.

North America, 2 vols. Stanford's Compendium of Geography (Chisholm). For library reference.

The Earth and its Inhabitants (Reclus). Nineteen large volumes. D. Appleton & Co.

#### SEVENTH GRADE

1. Text-books for pupils and teachers.

Tarr and McMurry Geography, Third Book.

Europe and the Other Continents. The chief topics are selected for extended treatment.

Other standard geographies.

2. Readings and references for children.

Northern Europe. 122 pp. Ginn & Co. Illustrated. Easy reading matter, adapted also to younger pupils.

Europe (Carpenter). American Book Co. 452 pp. Valuable and interesting.

Boyhood in Norway (Boynton). Scribners.

Modern Europe (Badlam). Silver, Burdett & Co.

Man-of-war Life (Nordhoff). Dodd, Mead & Co.

Under Sunny Skies. Ginn & Co.

Sketches from the Youth's Companion. Number 2.

Glimpses of Europe. Perry Mason & Co.

Personally Conducted (Stockton). Scribners.

King's Geographical Readers, Sixth Book.

Northern Europe. Lee & Shepard.

Holland and the Hollanders (Meldrum). Dodd, Mead & Co. 405 pp. Well illustrated.

Footprints of Travel (Ballou). Ginn & Co. 472 pp. Partly devoted to Europe.

Madam How and Lady Why (Kingsley). The Macmillan Co. Instructive reading.

Geography of the British Isles (Geike). The Macmillan Co. 127 pp.

Europe (E. A. Freeman). The Macmillan Co.

The Merchant Vessel (Nordhoff). Dodd, Mead & Co.

A Geographical Reader (Rupert). Sibley & Ducker.

Story of a Grain of Wheat (W. C. Edgar). D. Appleton & Co. An excellent study of wheat regions.

Stoddard's Lectures, Vols. I, V, VI, and IX. Large books suitable for reference library.

Sea and Land (Shaler). Good reference book for pupils and teachers.

Boy Travellers (Knox). Large volumes, well illustrated. Harpers. Europe, Great Britain, and Russia.

Men of Invention and Industry (Smiles). Harpers.

3. Additional references for teachers. Comparative geography (Ritter). American Book Co. A valuable pedagogical treatise.

A Geography of Europe (Lyde). Adam and Charles Black. 116 pp.

Baedeker's Guide-books of Europe. Great Britain, etc. Karl Baedeker, publisher, Leipzig.

The Scenery of Scotland (Geike). The Macmillan Co.

The Mediterranean Trip (Brooks). Scribners. 210 pp. Well illustrated.

Roundabout Journeys (C. D. Warner). Houghton, Mifflin & Co. European descriptions.

History of Commerce in Europe (Gibbins). 228 pp. The Macmillan Co.

General Geography (Mill). The Macmillan Co.

Man and his Markets (Lyde). The Macmillan Co. 168 pp.

From Ponkapog to Pesth (T. B. Aldrich). Houghton, Mifflin & Co. Sketches of European travel. 360 pp.

A Satchel Guide to Europe. Houghton, Mifflin & Co.

Commercial Geography of the British Empire (Lyde). Methuen & Co.

The Golden Gates of Trade (Yeats). George Philip & Son.

The Scenery of Switzerland (Lubbock). The Macmillan Co.

Our Cycling Tour in England (Thwaites). A. C. McClurg.

The Earth and its Inhabitants (Reclus). Appleton.

## EIGHTH GRADE

## 1. Text-books for use of teachers and pupils.

Tarr and McMurry's Geographies. Third Book, on Europe and the rest of the world. The Macmillan Co. The full treatment of Asia, Africa, and South America, and of the large topics of physiography. The comparisons of these later topics with those previously studied in Europe and North America will bring a complete review of the whole of geography.

Other standard geographies.

## 2. Supplementary readings for pupils.

Asia (Carpenter). American Book Co. A very interesting and instructive geographical reader.

Selections from the Youth's Companion. Number 4.

Sketches of the Orient. Perry Mason & Co.

South America (Carpenter). American Book Co.

The South American Republics (Markwick). Silver, Burdett & Co.

Life in Asia (Smith). Silver, Burdett & Co.

Views in Africa (Badlam). Silver, Burdett & Co.

Australia and the Islands of the Sea (Kellogg). Silver, Burdett & Co.

Footprints of Travel (Ballou). Ginn & Co.

A Geographical Reader (Rupert). Sibley & Ducker.

Stoddard's Lectures, Vols. III and IV. Balch Brothers & Co. Large, well-illustrated volumes for library and for reference.

Wild Life under the Equator (Du Chaillu). Harpers.  
Boy Travellers (Knox). Volumes on Japan and China, Ceylon, Africa, the Congo, Australasia, Egypt, and South America. Large, illustrated volumes.

Travels and Essays of Robert Louis Stevenson. Scribners. 428 pp.

Around the World in the Yacht *Sunbeam* (Brassey). Henry Holt & Co. 470 pp.

In Darkest Africa. 2 vols. (Stanley). Scribners.

The Story of Japan (Van Bergen). American Book Co. Historical and descriptive.

Story of China (Van Bergen). American Book Co. Descriptive and partly historical. These two books are small schoolbooks suitable for children.

3. Additional references for teachers.

Java, the Pearl of the East (Higginson). Houghton, Mifflin & Co.

First Book of Physical Geography (Tarr). 362 pp. The Macmillan Co.

International Geography (Mill). Appleton. A book for libraries and reference. 1052 pp.

Elementary Lessons in Physical Geography (Tarr). The Macmillan Co.

Sea and Land (Shaler). Scribners.

Aspects of the Earth (Shaler). Scribners.

The Relations of Geography and History (H. B. George). The Clarendon Press. Oxford.

Introduction to the Study of Commerce (Clow). Silver, Burdett & Co.



Industrial Rivers of the United Kingdom. T. Fisher Unwin.

The Commerce of Nations (Bastable). Methuen & Co. Partly historical.

Stanford's Compendium of Geography, Asia, 2 vols. (Keane). Edward Stanford.

The Earth and its Inhabitants (Reclus). D. Appleton & Co. For library.

The Forms of Water (Tyndall). D. Appleton & Co.

The Realm of Nature (Mill). Scribners.

The Earth, 1 vol. (Reclus). Harpers.

The Earth as modified by Human Action (Marsh). Scribners.

Explorers and Travellers (Greely). Scribners.

Man and the Glacial Period (Wright). D. Appleton & Co.

The New Basis of Geography (Redway). The Macmillan Co.

Nature and Man in North America (Shaler). Scribners.

How to study and teach Geography (Parker). D. Appleton & Co.

Comparative Geography (Ritter). American Book Co.

Longman's New School Atlas. Longmans, Green & Co.

Atlas of Commercial Geography. Cambridge University Press.

## MAPS

New Physical Maps. Rand, McNally & Co.

Johnston Wall Maps. Ginn & Co.

Normal Relief Maps. Eaton & Co. Chicago.

Flexible Blackboard Maps. Dann & Co. Chicago.

Outlines to be filled out with crayon.

Outline Maps. Ginn & Co.

Progressive Outline Maps. D. C. Heath & Co.

New Century Development Maps. The Morse Company.

McKinley Geography and History Outline Maps.  
The McKinley Publishing Company.

United States Geological Survey. Land and Water Map.

The Use of Government Maps in Schools. A pamphlet published by Henry Holt & Co. Useful to those wishing to secure and use government maps.



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